UNITED STATES
PATENT AND TRADEMARK OFFICE

STRATEGIC INFORMATION TECHNOLOGY PLAN for FISCAL YEARS 1996 - 2001

December 1995
Washington, D. C.

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UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
ASSISTANT SECRETARY AND COMMISSIONER
OF PATENTS AND TRADEMARKS
Washington, D C. 20231

MEMORANDUM

December 29, 1995

TO: Addresses

FROM: Assistant Secretary of Commerce
and Commissioner of Patents and Trademarks

SUBJECT: PTO's Strategic Information Technology Plan for
Fiscal Years 1996 - 2001

In the Patent and Trademark Office (PTO) Strategic Plan for the 1996 - 2000 period, I outlined a new vision and goals for the PTO which recognized the importance of intellectual property protection in a global and technology-based economy. The attached Strategic Information Technology Plan documents the role that information technology plays in achieving PTO's vision and goals. The plan also defines a vision for PTO's information technology environment that will greatly enhance the quality of PTO's service to its customers and guide the PTO Information Technology Program during the FY1996 to FY2001 period.

This plan emphasizes the need to migrate PTO's existing information technology capabilities to a standards-based open system environment while continuing to improve automation support to PTO's customers. The plan documents the following proposed enhancements:

- Making PTOnet Robust, Reliable, and Scalable to Meet Future Needs
- Making all PTO Applications Accessible from Desktop Workstations
- Expanding the Content of and Improve Access to Patent and Trademark Search Data Bases
- Redesigning Legacy Systems to Operate in an Open Systems Environment
- Implementing Reengineered Patent and Trademark Business Processes
- Improving Electronic Information Dissemination to External Customers

All PTO organizational units should ensure that current and planned information technology program initiatives are in conformance with this plan. This plan will be used as the primary basis for justifying and prioritizing future budget requests involving information technology resources.

Bruce A. Lehman

Attachment

Addressees: Mr. Goffney, Mr. Hampton, Mr. Huther, Ms Linck, Mr. Kazenske, Mr. Shaw, Mr. Stoll

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EXECUTIVE OVERVIEW

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EXECUTIVE OVERVIEW

Introduction

The Patent and Trademark Office's (PTO) mission is to administer the laws relating to patents and trademarks, promote industrial and technical progress in the United States, and strengthen the national economy. The PTO provides inventors and entrepreneurs with the protection and encouragement they need to turn their inventive and creative ideas into tangible realities. The PTO has established the following two business plan goals designed to protect intellectual property:

- Play a leadership role in intellectual property rights policy development.
- Provide our customers with the highest level of quality and service in all aspects of the PTO operations.

The PTO also recognizes that key supporting strategies for accomplishing its goals are to employ better business processes and information technology to more effectively support the PTO business environment.

> *.....key supporting strategies for accomplishing its goals are to employ better business processes and leverage information technology....*

To help managers and employees better understand the role of information technology in meeting the PTO's mission, goals, and objectives, the Chief Information Officer has developed a Strategic Information Technology Plan (SITP). The SITP contains important information on the PTO's long-term strategic vision for its automation modernization effort, as well as associated program goals, objectives, priorities, and strategies. It also contains important descriptive, scheduling, and funding information on information technology initiatives currently underway as well as those planned during the Fiscal Year (FY) 1996-2001 period. During this period, the PTO plans to spend approximately $1 billion on information technology initiatives.

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Strategic Vision

Whether employees are examining a patent or trademark application, assessing fees, answering customer questions, or providing assistance in the public search facilities, the quality, accuracy, and efficiency of their effort often depends on their ability to access information in a timely manner and in a useful format. With this in mind, the PTO is focusing on a strategic direction to develop an information technology environment for itself, its international partners, and the public, where patent and trademark information is created once, managed effectively, used often, and evolved over time to electronic commerce whereby most internal and external transactions are performed electronically and are accessible through the Global Information Infrastructure.

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Key Assumptions and Constraints

PTO information technology planning decisions are influenced by the PTO's goals and strategic vision as well as various political, social, demographic and technology assumptions and constraints. Several key assumptions and constraints are:

- Program sponsors will increase their requests for development of new AISs and changes to existing AISs while the public's demand for access to patent and trademark data will also increase.
- The ability to satisfy user demands will continue to be restricted by the availability of resources (personnel and funds).
- The funds available for acquiring information technology resources will be less than the demand for resources during the planning period.

- The PTO is totally dependent upon user fees for its income which can fluctuate within and between fiscal years. Income received above or below plan may change information technology initiative schedules due to changes in income streams.

- Required information technology personnel skills required increase as the transition to more complex on-line interactive client server systems continues.

- New technology will continue to evolve and enable users to have faster access to more timely data which will trigger demands to increase the use of information technology to help manage programs and provide new services.

- The present trend toward greater reliance upon data communications to access both internal and external databases through PTOnet will continue.

These assumptions and constraints impose conflicting demands on the PTO's information technology program. While increased demand for more and better automation support is expected to continue, the pressure to limit budget growth and reduce in-house information technology personnel will also continue throughout the planning period. Without adequate funding and sufficient highly skilled information technology staff, the PTO's long-range plans for improving its business processes and leveraging information technology will not be realized.

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Current Information Technology Environment

The current PTO information technology environment represents the baseline from which future improvements will evolve. The PTO's current information technology environment is comprised of the following six components:

- Patent Systems
- Trademark Systems
- Administrative Systems
- Information Dissemination Systems
- Information Technology Infrastructure
- General and Other Support

The PTO's programmatic systems (patent, trademark, and administrative systems) represent the primary automation support provided to examiners and administrative personnel. The PTO's information dissemination program uses various information technology products and services to provide intellectual property information to its customers throughout the world. The information technology infrastructure area encompasses all of the foundation hardware, system software, and communications that have been deployed in support of the PTO mission. General and other support includes those information technology activities that support all PTO AISs, such as information technology acquisitions, system engineering, data management, and information technology organizational management.

A distinctive characteristic of the PTO's information technology environment is the management of large and continually growing text and image data bases coupled with a requirement to process very large volumes of transactions to support application processing. As shown in figure 1 below, Patent application filings will continue to increase and reach approximately 234,000 by FY2000.

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Patent Applications Received

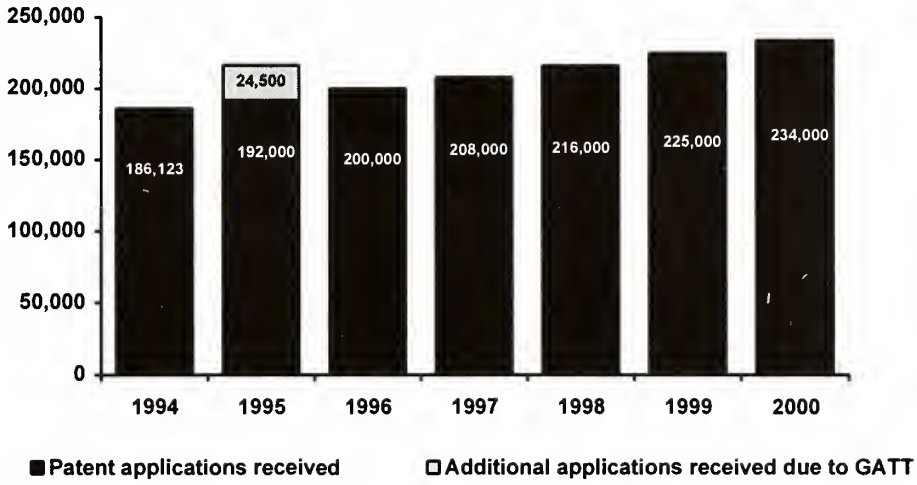

Figure 1

As shown in figure 2, trademark application filings are also expected to continue their growth through FY2000.

Trademark Applications Received

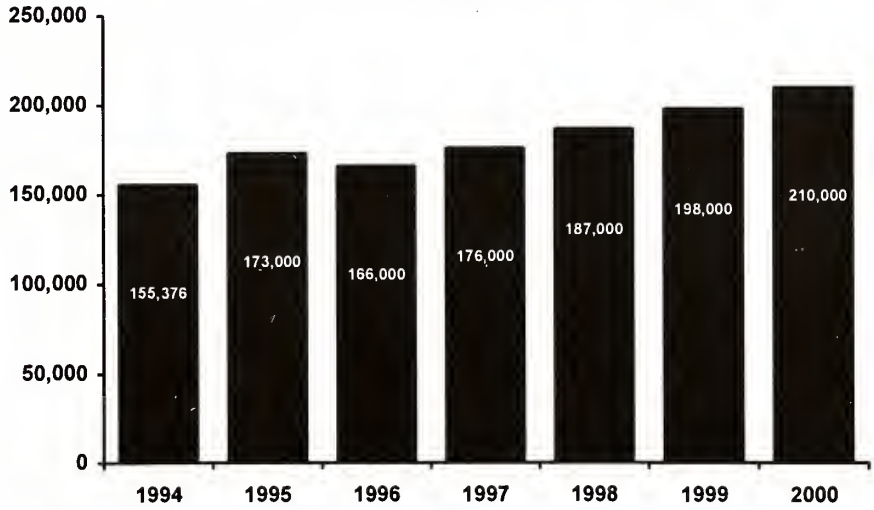

Figure 2

In FY1995, other PTO workload activity reached the following levels:

- 114,241 U. S. patents of all types were granted.
- 75,372 trademark applications were registered.
- 680,295 orders for patent copies and 25,939 orders for trademark copies were received.
- The PTO managed the accessibility, accuracy, and integrity of over 36 million patent and trademark related documents (referred to as search files).
- Examiner search transactions averaged over 300,000 per month.
- Administrative system transactions averaged over 5 million per month.

Support for the PTO's varied workloads requires a significant investment in information technology resources.

Support for the PTO's varied workloads requires a significant investment in information technology resources. These information technology resources include central computer systems, state-of-the-art office automation capabilities linked together through a PTO-wide communications network (PTOnet), and a cadre of highly skilled personnel. PTOnet is a comprehensive end-to-end data transmission facility linking servers, workstations, shared printers, and PCs in the PTO. It is a multi-ring network providing logical connectivity and network services to more than 5,000 customers of office automation products and access to the PTO's business applications and data bases throughout the 13 building campus in Arlington, Virginia. An architectural view of the PTO's current information technology environment is shown in Figure 3 below.

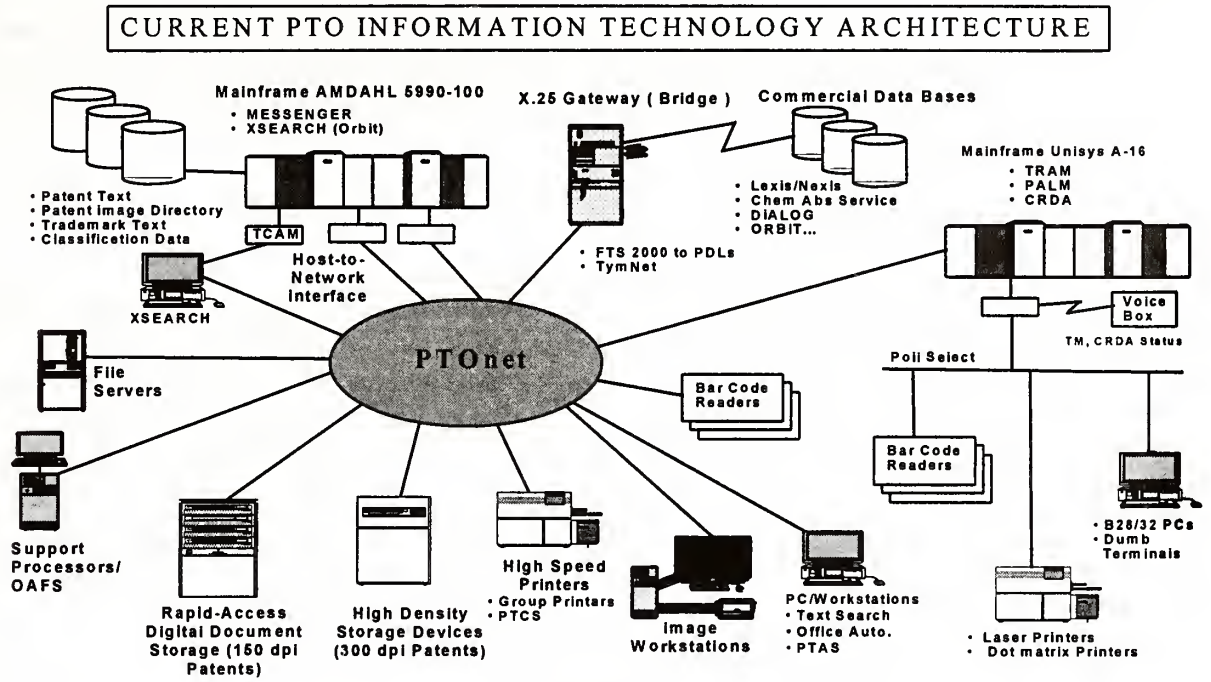

Figure 3

Information Technology Management Strategies

Organizational Responsibilities

PTO information technology policy is to centralize information technology program-related: planning, technical direction, oversight, policy formulation, system development and acquisition, business process improvement, and day-to-day operational management of the PTO information technology infrastructure under the Chief Information Officer. The dissemination of associated information products and services to the public is under the direction of the Associate Commissioner and Chief Financial Officer. This management framework provides for the evolutionary application of new technology, and fosters uniformity throughout the PTO through the standardization of hardware, software, and data to the maximum extent possible while ensuring responsive support.

The PTO also recognizes the role that individual employees play in identifying new and innovative information technology solutions. Innovations such as the "Examiner Toolbox" are an excellent example of how capabilities developed to support a few employees can be expanded to benefit PTO-wide activities. The information technology management framework established by the CIO through the Technical Reference Model and PTO's life cycle management policy provides

the flexibility needed to encourage continued innovation while ensuring that new capabilities can be easily expanded beyond the developer's desktop and can be supported by the PTO information technology infrastructure and maintained by the CIO.

Governing Strategies

To enhance the effectiveness of information technology management within the PTO, the Chief Information Officer has developed several key governing strategies. These strategies represent the fundamental principles and philosophies which the PTO will follow in managing its information technology resources and meeting the PTO's information needs. The governing strategies are summarized in the following four elements: project management, application software, data, and information technology infrastructure (hardware, network, and system software). The following provides a brief description of key strategies in each area.

Project Management Strategies

The project management strategy area addresses the overall management, control, and resource allocation of information technology projects.

1. All future PTO Automated Information System (AIS) projects will apply matrix management and follow the PTO's current Life Cycle Management Policy for systems development activities.

2. Project management organizations will be adequately staffed to manage the AIS project.

3. Each information technology project will be baselined in the PTO project management control system to ensure adequate visibility into actual progress and accurate tracking of project costs.

4. PTO information technology resource acquisitions will emphasize full and open competition and will adhere to current and planned PTO information technology standards.

Application Software Strategies

The application software strategy area includes the analysis, design, development, implementation, operation, maintenance or enhancement of application software.

1. The PTO is committed to improving its business processes. Therefore, business process re-engineering will precede application software design and development, whenever possible.

2. A standard system development methodology, processes, and supporting tools will be used on all PTO application software projects.

3. When appropriate, prototyping will be used to more clearly define requirements.

4. Software upgrades, re-use and sensitive information security will also be emphasized on all PTO software development efforts.

Data Management Strategies

The data element strategy area includes standardization, control, and the integrity of data being stored and manipulated.

1. The PTO will standardize and register data models and data elements in a data repository system which will facilitate data sharing, data re-use, and interoperability among AISs.

2. The PTO will also foster increased data sharing with its external customers by pursuing electronic data interchange agreements with international intellectual property and patent organizations and selected private sector organizations.

Information Technology Infrastructure Strategies

The information technology infrastructure strategy area includes ongoing operations, modifications, augmentation, replacement, and maintenance of computer and communications equipment, network facilities, and system software.

1. The PTO will transition its information technology infrastructure to a standards-based open system environment

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The governing strategies established by the Chief Information Officer will guide the PTO's future information technology initiatives and will greatly assist in enhancing the quality of information technology support provided to the PTO's customers.

Strategic Information Technology Initiatives

The heterogeneous nature of the PTO's current information technology environment is constraining the PTO's ability to infuse rapidly new technology to meet the constantly growing demands of the PTO workforce. Consequently, the PTO will focus its efforts on transitioning its current information technology infrastructure to a standards-based open system environment. A Technical Reference Model, based on the National Institute of Science and Technology's Application Portability Profile, has been developed which provides a comprehensive set of information standards, services, protocols, and products that define the target technical environment and guide future information technology efforts.

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Current AISs are a major impediment to implementing reengineered patent and trademark business processes. The current systems are not constructed based on an architecture that allows easy adaptation to continuously changing business needs and require duplicative communications networks and hardware are expensive to maintain and operate. Because PCs located on employees desktops are not able to access and process patent and trademark information, employees are forced to use several types of devices to complete their normal work tasks. The current PTO systems are becoming increasingly resistant to change and are continually requiring more resources to maintain and operate. A systematic incremental approach has been devised to implement new automated systems that support reengineered patent and trademark processes which will dramatically improve operating efficiency and greatly improve customer satisfaction.

As the PTO moves to an open system environment, its information technology service enhancement plans will be focused in the following areas:

- Make PTOnet Robust, Reliable, and Scalable to Meet Future Needs

- Make all PTO Applications Accessible from Desktop Workstations
- Expand the Content of and Improve Access to Patent and Trademark Search Data Bases
- Redesign Legacy Systems to Operate in an Open Systems Environment
- Implement Reengineered Patent and Trademark Business Processes
- Provide Effective Access to Patent and Trademark Information

An overview of proposed major enhancements in each of the focus areas is discussed below.

Make PTOnet Robust, Reliable, Scalable, and Secure to Meet Future Needs

The PTO continues to experience exponential growth in both the use of its networked computer workstations and its PTOnet-provided office automation support services. A robust, reliable, scalable, and secure network is critical in the evolution towards the PTO's future information technology environment in which most internal and external transactions are performed electronically.

The PTO currently has five terabytes of patent and trademark image data that is projected to grow to 15 terabytes by the year 2000. Image traffic places a huge workload and stringent performance requirements on PTOnet. Currently, there is relatively limited access via the shared workstations to the patent image data. The combination of easier access via desktop workstation, and a two and a half fold increase in data base size, requires a redesign and upgrade of PTOnet. This is particularly necessary to support the increased demand for images at the examiner's desktop PC workstation as well as the many new resource intensive applications already in development or planned. In addition, security will be a far greater concern. As patent applicant information will be electronically available prior to public release, this, in turn, greatly increases the risk of industrial espionage. To address these expanding needs as well as future public access requirements, several major enhancements have been

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planned to make the current system architecture more robust, reliable, scalable, and secure.

PTOnet will become an open system standards-based high speed network providing data communications for the PTO campus and access to remote locations through secure gateways. The PTO plans to integrate all PTOnet sub-networks; facilitate universal transfer and exchange of electronic mail, word processing, spreadsheets, text, and image data; provide access to business applications; provide access to external commercial data bases and external networks where policy permits; support electronic commerce for patent and trademark applications and financial transactions; and provide for adequate security.

One critical near-term PTOnet enhancement is the replacement of the existing file server infrastructure with updated components designed for the current application file server environment. Additional near-term enhancements include: upgrading the current communications backbone through installation of high speed switching devices employing Asynchronous Transmission Mode (ATM) technology and enhancing network security to support work at home projects. Longer term enhancements include: implementation of centralized network management tools to support automated operations; and the upgrade of the current line speed from workstations to servers from 10 megabits per second to 100 megabits per second.

Make all PTO Applications Accessible from Desktop Workstations

The PTO plans to make all business and office automation applications and data bases accessible from employee desktop workstations in a seamless and integrated fashion by July 1998. The PTO will implement a common workstation interface that will enable the PTO employees to interact with business and office automation applications regardless of what hardware and software is used or where the data resides.

The PTO plans to make all business and office automation applications and data bases accessible from employee desktop workstations in a seamless and integrated fashion by July 1998.

The current information technology infrastructure of incompatible mainframe, minicomputer, and microcomputers with incompatible COTS software products has hampered the PTO's ability to implement a common workstation interface that can access business and office automation applications and supporting data bases.

The PTO's critical business systems are based on technologies from the 1970's, 1980's, and 1990's. PALM, TRAM, and CRDA mainframe data bases are accessed directly by terminals. The Classified Search and Image Retrieval workstations use the Unix operating system. Most other business and office automation applications use the PC based Windows operating system. A common desktop workstation operating system with data base access through PTOnet is needed to provide the seamless interface to all PTO business and office automation applications.

The PTO plans to migrate over the next 3 years to the Windows NT operating system at the desktop workstation.....

The PTO plans to migrate over the next 3 years to the Windows NT operating system at the desktop workstation to provide the seamless interface with all of the PTO's office automation and business applications. To help achieve this migration, the PTO will replace all existing PCs and terminals on the desktops of the PTO employees and the image workstations in the Patent cluster rooms, as well as the PC workstations in the trademark examining attorney "bullpens", with enhanced PC based text/image workstations.

The PTO will deploy 700 PC based text and image workstations to patent and trademark examiners by December 1996.

The PTO will deploy 700 PC based text and image workstations to patent and trademark examiners by December 1996. The patent examiner workstations will have both the Unix and Windows operating systems installed which will provide access to the patent text and image data as well as the office automation applications at the examiner's desktop. However, the access will not be seamless until the Unix-based business applications are replaced by Windows NT applications in 1998. The PTO plans to complete the installation of the PC based text and image workstations to all patent examiners by December 1997. PALM and TRAM will be accessible by PC workstations over PTOnet by September 1996. Trademark examining attorneys will also have access to additional Trademark business and office automation applications from their desktop by July 1996.

PALM and TRAM will be accessible by PC workstations over PTOnet by September 1996.

In addition to the above, several key business and office automation projects, also underway, include the Executive Information System (EIS) and the Executive Document Management System (EXDOCS). The EIS project, in this regard, is expected to provide a single easily accessible data repository for critical finance, human resources, diversity, production, workload, contracts, and international operations by the end of FY1996. Likewise, beginning with a limited pilot test in FY1996 and followed by incremental expansion to at least 20 users each year thereafter, EXDOCS is expected to greatly improve office-wide document tracking, streamline the executive document review, correction, and approval process, and improve document standardization.

Expand the Content of and Improve Access to Patent and Trademark Search Data Bases

The PTO is building an open system standards-based information technology infrastructure to support the examination of patent and trademark applications and to support information dissemination and administrative functions. The infrastructure includes the ability to electronically search the text of U.S. patents issued since January 1971 and the more than 1.5 million trademark registrations and applications. These text search functions are provided by commercial products modified to meet the PTO requirements. The patent and trademark search systems are expensive to maintain and can be difficult to learn and use. In addition, the trademark search system can only be accessed by 60 concurrent users and access to foreign patent information is very limited. The PTO plans to replace the existing text search systems with Commercial-Off-The-Shelf (COTS) products, expand the content of PTO data bases, and provide greater access to external data bases.

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The PTO's long range goal is to achieve a mostly electronic operation with minimal reliance on paper. Patent examiners will need extensive search capabilities for both text and other patent content in order to shift the reliance on paper files to the electronic files. Text search is a key component

The PTO currently plans to begin replacing its current Patent Text Search System beginning in late 1998 and complete this replacement by FY2001.....

to a number of the PTO operations, including examination and classification. The PTO plans major improvements to the content of and access to patent prior art data bases and the functionality and user friendliness of the search tools. The PTO currently plans to begin replacing its current Patent Text Search System beginning in late 1998 and complete this replacement by FY2001 with a number of COTS search products to support the unique requirements of the different art groups. Should funds become available, the PTO will accelerate the text search replacement to take advantage of many new products now on the market. Future text search products, in this regard, will be able to search the text, sections of text (e.g., claims) and ultimately, graphics and other complex work units attached to a patent such as chemical structures and be fully integrated into PTO's electronic operations.

The PTO plans to expand the text search capabilities to include foreign patents by supplementing the current patent examiner desktop workstation text search capability with clipped first page images of selected Japanese and European patents beginning October 1996. The PTO plans to incrementally load the foreign patents and make the entire Japanese and European patent data base available by FY2001. The PTO also plans to assess the economic feasibility of performing an Optical Character Recognition (OCR) data capture of text information for U.S. patents issued prior to January 1971. Should funds become available or current technology improve to the point of making it economically feasible, the PTO will expand the patent text search data base. This data capture effort would focus on arts which are reasonably active and in which text search adds value beyond that obtained from image searching.

The PTO plans to incrementally load the foreign patents and make the entire Japanese and European patent data base available by FY2001.

The PTO plans to make significant improvements in the performance of the current Trademark Search System, by expanding the systems ability to support a greater number of concurrent users (from 60 to 300) and providing a number of functional improvements over the current version. Additional search functions include range

The current Trademark Search System will be replaced by July 1996 and will be accessible from the examining attorney's desktop workstation over PTOnet.

searching, additional search fields, and the ability to stop a search in progress. The current Trademark Search System will be replaced by July 1996 and will be accessible from the examining attorney's desktop workstation over PTOnet.

Redesign Legacy Systems to Operate in an Open System Environment

In order to improve customer service, legacy business applications must be replaced as quickly as economically feasible by AISs that use "open system" components and have an architecture that facilitates modification, thereby requiring less resources to operate and enhance. In order to do more with less, greater use must be made of COTS software products and development methods. The new systems must use business objects that are familiar to patent and trademark customers. To that end, the OCIO has developed a strategy to accommodate changes that are occurring more frequently than in the past, must be implemented in ever shortening periods of time, and will support reengineered business processes.

.....legacy business applications must be replaced as quickly as economically feasible by AISs that use "open system" components and have an architecture that facilitates modification thereby requiring less resources to operate and enhance.

The migration from legacy business applications to AISs based on modern open system architectures will be achieved within the context of the patent and trademark TO-BE models. In order to reduce operating costs and eliminate duplicative hardware and communication networks, the OCIO must migrate to "open system" products and services that take advantage of technological improvements that have been made in hardware, software and communication techniques. Current PTO business applications and systems represent an aging set of products that have repeatedly been modified, were not designed to support business processes that have been reengineered, are exhibiting constantly increasing maintenance and operating costs, and use hardware and communication networks that are technologically obsolete.

The PTO is critically dependent on the Patent Application Location and Monitoring (PALM), Cash Receipts and Deposit Accounts (CRDA), and Trademark Reporting and Monitoring (TRAM) legacy systems to support day-to-day operations. Collectively,

The PTO is critically dependent on.....legacy systems to support day-to-day operations.

they processed more than 57 million transactions in FY1994. These systems were developed more than 15 years ago and have undergone a variety of changes over time. Some of the significant changes include: platform migrations, expansion of capabilities, new reporting requirements and system changes to reflect changing business processes. These systems are costly and difficult to maintain and cannot take advantage of advances in technology. The PTO has also experienced difficulty in hiring personnel and contractors that can maintain these systems.

PALM performs workflow tracking and status reporting for patent application processing. Based on concerns raised during customer focus sessions, the PTO conducted an independent technical assessment of PALM. The major assessment findings are that PALM: (1) is constantly undergoing change; (2) there is no formal configuration management of this change; (3) is very dependent on institutional knowledge to keep it running; (4) program modules are poorly constructed, complex, and difficult and costly to maintain; and (5) has a significant century date change problem which can lead to erroneous results as early as FY1998. The PTO plans to initiate formal configuration management of PALM, stabilize the system, make revisions to solve the century date change problem and begin to redesign PALM to operate in an open system environment. The PTO plans to have the redesigned PALM operational by mid-FY1998.

The PTO plans to have the redesigned PALM operational by mid-1998.

TRAM contains bibliographic and prosecution history information for more than 1.85 million applications and registrations, performs workflow tracking, photocomposes the Trademark Official Gazette and produces management reports. TRAM is an integral component of workflow procedures relating to the applications and the maintenance of registrations. TRAM is dependent on institutional knowledge to keep operating properly and has a significant century date change problem which can lead to erroneous results as early as 1998. TRAM is costly and difficult to maintain and cannot take advantage of advances in technology available in an open system environment. The PTO plans to have the redesigned TRAM operational by mid-1998. The redesigned TRAM will begin the incremental implementation of the reengineered trademark business processes.

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The PTO is currently authorized by legislation and administrative rules to recover all costs through the collection of user fees. CRDA supports the processing of receipts (cash, credit cards, and checks) that accompany applications and the purchase of the PTO information products and the management of deposit accounts. However, CRDA is costly and difficult to maintain and cannot take advantage of advances in technology available in an open system environment. In addition, CRDA does not conform to Federal requirements for financial management systems. Recognizing these shortcomings, the PTO initiated the development of the Revenue Accounting and Management (RAM) System in 1994 to replace CRDA. The PTO plans to deploy the initial version of RAM in September 1996. The PTO will add electronic data interchange (EDI) mechanisms to facilitate fee transaction processing and collections between the PTO and its external financial institutions beginning in 1998.

The PTO plans to deploy the initial version of RAM in September 1996.

Implement Reengineered Patent and Trademark Business Processes

The PTO has completed the design of the reengineered patent and trademark business processes. These reengineered business processes rely heavily on information technology to achieve dramatic improvements in how the PTO accomplishes its mission and provides products and services. Key features of the PTO's future automation environment, in this regard, include: (1) state-of-the-art desktop tools; (2) one-time data capture and data availability through an integrated system; (3) electronic filing and interactive prosecution; and (4) enhanced communication and workflow support systems that allow flexible use of resources; (5) expanded public access to patent and trademark information from geographically dispersed areas; and (6) enhanced management reporting capabilities tailored to meet operational and executive management needs. There are several planned AIS projects that will support the reengineered patent and trademark business processes. These projects include: providing an automated assisted classification and search capability to support the reengineered patent examination process, the Patent Application Management (PAM) system, the

The PTO has several planned AIS projects that will support the reengineered patent and trademark business processes. These include the Patent Application Management (PAM) system, the Trademark Information System (TIS), the Patent and Trademark Text Search Replacement projects, and Global Patents.

Trademark Information System (TIS), the Patent and Trademark Text Search Replacement projects, and Global Patents.

The implementation of electronic filing is critical to the efficiency, effectiveness, and operational cost reductions associated with PAM and TIS. The PTO has been following a staged approach in developing its concept for electronic filing since 1992. The PTO has initiated a series of pilot programs primarily focused on the development of software having the functionality needed for initial electronic filing of patent and trademark applications. To date, participants in these pilot programs have included members of intellectual property firms and corporate offices. The PTO surveyed pilot participants in early 1994 to determine the best approach to implementing electronic filing. Based on the survey results, the PTO has developed a "concept of operations" for achieving bi-directional electronic filing capability between the PTO and its applicant community. The concept has also been agreed to by our Trilateral partners. The concept includes two Implementation Guides, one for filing diskettes and another for on-line filing. The Implementation Guides are presently under review by the PTO's Trilateral partners. The PTO plans to issue the guide on diskette filing in late 1996 after it has gone through the public review process. The PTO plans to issue the on-line filing guide in late 1997. These guides will provide a clear definition of the PTO's basic electronic application filing requirements as well as establish a set of minimum standards which software developers must meet.

The implementation of electronic filing is critical to the efficiency, effectiveness, and operational cost reductions associated with PAM and TIS.

The PTO plans to initiate development of PAM in late 1997 and incrementally deploy capability through 2001. PAM will eventually accept electronically filed patent applications, simplify and expedite Patent Examiner actions including interacting with applicants and agents, track patent applications through all phases of the process, and ready the patent for publishing. The Pre-Grant Publication system and the redeveloped PALM system will serve as a foundation from which to develop PAM.

The PTO plans to initiate development of PAM in late 1997 and incrementally deploy capability through 2001.

The PTO plans to initiate development of TIS in 1997 and incrementally deploy capability through 2001. TIS will eventually accept electronically filed trademark applications, maintain an electronic file for application and registration, record prosecution history and production information, improve search capabilities, photocompose the Trademark Official Gazette and Registration Certificates, and disseminate trademark information. The redeveloped TRAM system will serve as a foundation from which to develop TIS.

The PTO plans to initiate development of TIS in 1997 and incrementally deploy capability through 2001.

Improve Electronic Information Dissemination to External Customers

As an integral part of its mission, the PTO must assure that patent and trademark information is available to all sectors of society that have a need for and can use the information. The PTO must strive to meet the challenges of today's technologies by making information available in the most useful forms and at reasonable prices, while recovering costs associated with the dissemination process.

The PTO must strive to meet the challenges of today's technologies by making information available in the most useful forms and at reasonable prices, while recovering costs associated with the dissemination process.

Three principal components of the PTO's approach in this area include: 1) developing and providing a variety of electronic information products directly to the public, or indirectly through local search facilities and Patent and Trademark Depository Libraries (PTDLs), 2) sale of data base copies developed for internal use to private sector companies who repackage the data and ensure its availability to a wide audience of users, and 3) reliance on the nationwide network of PTDLs to provide broad public access and support to users of PTO information.

Key projects currently underway, in this regard, include the External Access Gateway, Electronic Information Center (including a special project that will provide 20 years of searchable patent bibliographic text data on the Internet), and Patent and Trademark Information Products.

Key projects ... include the External Access Gateway, Electronic Information Center, ... and Patent and Trademark Information Products

Implementation Schedule

Key milestone dates for the strategic information technology initiatives are summarized in Figure 4 on page 22.

Information Technology Budget

A complete financial summary of how the PTO plans to spend approximately $1 billion in support of information technology projects during the FY1996-2001 planning period is provided in Figure 5 on page 23.

PTO Master Implementation Schedule for Strategic Information Technology Initiatives

INITIATIVES	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01
Make PTOnet Robust, Reliable, Scalable, and Secure to Meet Future Needs	Begin replacement of existing file server infrastructure. Begin upgrade of current communications backbone. Begin enhancement of network security to support Work At Home projects. Begin implementation of centralized network management tools.	Complete replacement of existing file server infrastructure. Complete upgrade of current communications backbone. Complete network security to enhancement to support Work At Home projects. Begin upgrade of desktop workstation line speed from Mbs. to 100 Mbs.		Complete full upgrade of line speed from desktop workstations to servers from 10 Mbs to 100Mbs.		
Make All Applications Accessible From Desktop Workstations	Begin work on desktop accessibility of business/ office automation applications and data bases. Begin migration to Windows NT. PALM and TRAM accessible from desktops over PTOnet. Deploy initial EIS and EXDOCS capability.	Deploy 700 desktop workstations to patent and trademark examiners by December 1996. Begin expanded deployment of EIS capability. Begin expanded deployment of EXDOCS.	Complete migration to Windows NT Operating Systems to provide seamless interface with PTO-wide office automation and business applications. Complete deployment of patent desktop workstations. Additional 1600 desktop workstations deployed by December 1997.	Begin deployment of replacement workstations.	Continue deployment of replacement workstations.	Continue deployment of replacement workstations.
Expand the Content of and Improve Access to Patent and Trademark Search Databases	Supplement Patent examiner desktop workstations with Japanese and European clipped images. X-Search Version 1.1 ready for use on Trademark examiner desktops.		Begin replacement of current patent text search system.			Complete replacement of patent text search system. Complete incremental load of foreign patents. Entire Japanese and European data base now available on examiner desktop workstations.
Redesign Legacy Systems to Operate in an Open System Environment	PALM accessible to a limited number of users.	Initial version of RAM operational.	Redesigned TRAM operational. Redesigned PALM system operational.			
Implement Reengineered Patent and Trademark Business Processes	Issue Electronic Filing Implementation Guide (Vers.1- Filing on diskettes).	Initiate PAM development. Initiate TIS development. Issue Electronic Filing Implementation Guide (Vers..2- Filing on-line).	Begin incremental deployment of PAM. Begin incremental deployment of TIS.			Complete PAM Vers.3. Complete incremental deployment of PAM. Complete incremental deployment of TIS.
Improve Electronic Information Dissemination to External Customers	Expand automated data bases and search tools available to the public at PTDLs throughout country via Internet. Electronic Information Center available to the public. Expand magnetic tape, CD-ROM, other commercial products and services,	Continued expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Continued expansion of magnetic tape, CD-ROM, and other commercial products and services,	Continued expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Continued expansion of magnetic tape, CD-ROM, and other commercial products and services,	Continued expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Continued expansion of magnetic tape, CD-ROM, and other commercial products and services,	Continued expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Continued expansion of magnetic tape, CD-ROM, and other commercial products and services,	Continued expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Continued expansion of magnetic tape, CD-ROM, and other commercial products and services,

Figure 4

PTO Information Technology Financial Summary

(Financial estimates below are stated in thousands of dollars)

	FY96	FY97	FY98	FY99	FY00	FY01
Patent Systems						
Projects	45,579.41	43,710.10	61,610.40	67,344.00	59,136.20	51,872.60
Personnel	4,915.85	4,815.85	4,936.52	5,060.84	5,188.90	5,320.82
Subtotal	50,495.26	48,525.95	66,546.92	72,404.84	64,325.10	57,193.42
Trademark Systems						
Projects	1,779.90	3,696.30	3,601.00	9,028.40	12,230.50	11,137.10
Personnel	2,314.10	2,171.60	2,229.72	2,285.04	2,342.03	2,400.72
Subtotal	4,094.00	5,867.90	5,830.72	11,313.44	14,572.53	13,537.82
Administrative Systems						
Projects	4,537.82	3,310.30	3,729.43	2,536.95	2,326.98	2,127.91
Personnel	630.00	630.00	648.90	668.37	688.42	709.07
Subtotal	5,167.82	3,940.30	4,378.33	3,205.32	3,015.40	2,836.98
Information Dissemination Systems						
Projects	8,590.30	7,388.40	8,831.40	8,920.90	7,749.80	8,016.00
Personnel	1,006.00	1,012.10	1,018.30	1,024.70	1,030.30	1,038.10
Subtotal	9,596.30	8,400.50	9,849.70	9,945.60	8,780.10	9,054.10
Information Technology Infrastructure						
Projects	42,693.30	40,315.05	42,622.90	43,235.30	46,034.90	48,249.70
Personnel	10,509.10	10,440.30	10,705.88	10,979.42	11,261.17	11,551.37
Subtotal	53,202.40	50,755.35	53,328.78	54,214.72	56,296.07	59,801.07
General and Other Support						
General Support						
Projects	19,181.70	20,173.50	21,710.60	22,112.40	21,901.40	22,221.80
Personnel	9,162.99	6,366.85	6,505.98	6,649.27	6,796.87	6,948.90
Acquisition Support						
Projects	3,349.90	13,506.20	14,656.20	10,106.20	16,006.20	8,856.20
Personnel	980.60	980.60	1,005.28	1,090.70	1,056.88	1,083.84
Subtotal	32,675.19	41,027.15	43,878.06	39,958.57	45,761.35	39,110.74
TOTAL PROJECTS	**125,712.33**	**131,099.85**	**156,761.93**	**163,284.15**	**165,385.98**	**152,481.31**
TOTAL PERSONNEL	**29,518.64**	**26,417.30**	**27,050.58**	**27,758.34**	**28,364.57**	**29,052.82**
TOTAL	**155,230.97**	**158,517.15**	**183,812.51**	**191,042.49**	**193,750.55**	**181,534.13**

Figure 5

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Chapter 1

PLAN OVERVIEW

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Chapter 1

PLAN OVERVIEW

1.1 General

To help managers and employees understand the role that information technology plays in supporting the PTO, the Office of the Chief Information Officer has developed this Strategic Information Technology Plan. This plan contains strategic objectives for the use of information technology in support of the PTO mission and identifies an approach for achieving those objectives. This plan also documents the current status of PTO information technology support capabilities as well as future initiatives and directions during the FY1996-2001 period.

This chapter contains a brief description of the: role of the current automation modernization effort in supporting the PTO mission; importance of Business Process Re-engineering; influence of the National Information Infrastructure (NII) and the Government Performance and Review Act of 1993 on this modernization effort; scope and purpose of the plan; and how this plan was developed and how it is organized.

1.2 Introduction

1.2.1 Background

The PTO developed its first Automation Master Plan in 1982, in compliance with Public Law 96-517. This document contained several objectives aimed at reducing paper handling. The future patent process was to retain many current procedures. However, through the efficiencies of automation, paper handling was to be totally eliminated. The PTO planned to accomplish this by: standardizing application formats to enable automated input of the application including the drawings; on-line analysis of application data to assist in determining compliance with administrative requirements; automated searching of the appropriate data bases for potential references; automating the preparation of examiner's actions; and disseminating technological data using telecommunications.

The vision of the PTO's information technology modernization program at that time included: end-to-end management of applications electronically (known today as the Patent Application Management (PAM) System; a workstation on every examiner's desk to access all needed data bases; electronic storage and retrieval of all information needed to determine whether a patent should be issued; and electronic communications with applicants and constituents.

The PTO's strategic vision, goals, and objectives are essentially the same today. However, the scope of the program has been significantly expanded to include many new

system development, enhancement, and replacement priorities. Four of the five major components of the Automated Patent System (APS) have already been completed. Only PAM needs to be developed and implemented based on reengineered business processes. These and other key initiatives are addressed at length in Chapters 5 and 6 as well as in Appendix I.

1.2.2 Strategic Vision

Whether employees are examining a patent or trademark application, assessing fees, answering customer questions, or providing assistance in the public search facilities, the quality, accuracy, and efficiency of their effort often depends on their ability to access information in a timely manner and in a useful format. The PTO is focusing on a strategic direction to develop an information technology environment for itself, its international partners, and the public, where patent and trademark information is created once, managed effectively, used often, and evolved over time to electronic commerce whereby most internal and external transactions are performed electronically and are accessible through the Global Information Infrastructure.

1.2.3 Key Assumptions and Constraints

PTO information technology planning decisions are influenced by the PTO's goals and strategic vision as well as various political, social, demographic and technology assumptions and constraints. Several key assumptions and constraints are:

- Program sponsors will increase their requests for development of new AISs and changes to existing AISs while the public's demand for access to patent and trademark data will also increase.
- The ability to satisfy user demands will continue to be restricted by the availability of resources (personnel and funds).
- The funds available for acquiring information technology resources will be less than the demand for resources during the planning period.
- The PTO is totally dependent upon user fees for its income which can fluctuate within and between fiscal years. Income received above or below plan may change information technology initiative schedules due to changes in income streams.

- Required information technology personnel skills required increase as the transition to more complex on-line, interactive, client server systems continues.

- New technology will continue to evolve and enable users to have faster access to more timely data which will trigger demands to increase the use of information technology to help manage programs.

- The present trend toward greater reliance upon data communications to access both internal and external databases through PTOnet will continue.

These assumptions and constraints impose conflicting demands on the PTO's information technology program. While increased demand for more and better automation support is expected to continue, the pressure to constrain budget growth and reduce in-house information technology personnel will also continue throughout the planning period. Without adequate funding and sufficient information technology staff, the PTO's long-range plans for improving its business processes and leveraging information technology will not be realized.

1.2.4 Importance of Business Process Re-engineering

The PTO's ability to employ better business processes is critical to meeting its strategic information technology vision. Consequently, the PTO now requires that business process re-engineering be performed as the first step prior to initiating any new systems development effort.

Current PTO business process re-engineering efforts are focused on achieving significant efficiencies and cost reductions in what are still predominantly paper-based and labor-intensive patent, trademark, and administrative application processing activities (pre-examination, examination, and post-examination). Completion of target business process "To-Be" models in each of these activity areas, as well as establishment of a reengineered business planning and budget process, is expected to be completed in 1996.

The use of business process re-engineering techniques within the PTO is expected to materially change how the PTO does business in the future. This includes significant paradigm shifts and order-of-magnitude changes in the way the PTO operates; the way it uses its human resources, and the way it deals with its customers. It is also expected to have a profound impact on the PTO's current operational environment. Implementation of new processes can be expected to require significant information technology resources to plan the requirements and acquire the systems necessary to achieve a redesigned examination process that relies on electronic examination and case processing. Current

automated systems will require an increase in storage requirements to accommodate additional electronic data. Additional space will also be required as processes in place transition to the business process re-engineering design to allow examination to continue. Re-engineered planning and budget processes will require new interactive intelligent automated cost accounting and financial planning systems. Many current operational processes will be eliminated or realigned, and non-value added processes will be eliminated. Many employees who are performing outdated tasks will also require re-training.

1.2.5 Influence of the National Information Infrastructure

The PTO is currently exploring a number of ways in which the National Information Infrastructures (NII) might be used to facilitate the receipt and distribution of patent and trademark information. As part of this process, a number of technical, policy, and privacy issues are being addressed in various forums. In this regard, the PTO Commissioner presently chairs the Working Group on "Intellectual Property Rights" under the White House Information Infrastructure Task Force, which is, in turn, chaired by the Secretary of Commerce. In September 1995, the Task Force released a report from the Working Group entitled, "Intellectual Property and the National Information Infrastructure." The report focused on the Working Group's examination of the intellectual property implications of the NII and need to make appropriate changes to United States intellectual property law and policy.

While the Working Group's examination and analysis addresses each of the major areas of intellectual property law, its primary focus was on copyright law and its application and effectiveness in the context of the NII. The Working Group made a number of recommendations, including several which directly affect the PTO and its use of the NII.

In the Patent and Trademark areas, the Working Group recommended that the PTO:

- Obtain public input related to measures that can be adopted to ensure the authenticity of electronically-disseminated publications, particularly with respect to verifying the contents and the date of first dissemination of the publication, and evaluating the substantive value of the information contained in the publication as to its role in patentability determinations.

- Explore the feasibility of establishing requirements or standards that would govern authentication of the date and contents of electronically-disseminated information for purposes of establishing their use as prior art.

- Propose changes to the International Classification System to ensure that the system reflects the goods and services of modern information technology.

- Regularly update its Manual for the Identification of Goods and Services to reflect new goods and services used on or in connection with the NII and the Global Information Infrastructure.

1.2.6 Influence of the Government Performance and Review Act of 1993

The PTO takes every opportunity to explore new ways of providing its customers and stakeholders with high-valued products and services. In January 1994, the PTO was selected to participate in the Government Performance and Results Act (GPRA) pilot program. As a pilot program participant, the PTO has committed to establishing, monitoring and reporting on program performance, goals, and indicators. The PTO has established two performance goals which influence the delivery information technology support services. These performance goals are focused on improving the methods used to disseminate patent and trademark information, and measuring the overall quality of information technology services provided to PTO customers.

In the information dissemination area, the PTO currently disseminates patent and trademark information through paper, microfilm, microfiche, CD-ROM, and at Patent and Trademark Depository Libraries (PTDLs). As the world enters the information age and the information superhighway, the PTO will strive to globally disseminate patent and trademark information in the most accessible and economical means.

The PTO will also address the overall quality of the services it provides to its customers. In the information technology area, the PTO will establish and implement customer satisfaction standards, which fully reflect the needs and perspectives of its stakeholders and users. To accomplish this objective, the PTO will conduct customer satisfaction surveys and focus group sessions, designed to provide continuous communications and feedback from its customers. These efforts will help the PTO to achieve the goal of providing its information technology customers with the highest level of quality and service possible.

1.3 Scope of Plan

This plan describes the information technology support to be provided during the FY1996-2001 period. It includes:

a. All current and planned Automated Information Systems (AISs) in support of the Office of the Assistant Commissioner for Patents, the Office of the Assistant Commissioner for Trademarks, the Office of the Associate Commissioner for Administration and Quality Services and Chief Financial Officer, and the Office of the Assistant Secretary and Commissioner of Patents and Trademarks.

b. All current and planned computer equipment and commercial-off-the-shelf (COTS) software initiatives.

c. All current and planned PTO telecommunications network and data management initiatives.

1.4 Purpose of Plan

The purpose of the plan is to:

a. Provide a means to document, monitor, guide, and assist with the PTO's Information Technology (IT) Program for the period FY1996-2001.

b. Provide the information and justification necessary to program information technology resource requirements in the PTO budget process.

c. Focus increased attention on the management of information technology resources.

d. Provide information on the current status and future direction of the use information technology within the PTO.

e. Involve executive level management, program sponsors, and customers in the information technology planning process.

f. Avoid duplication of effort and encourage the sharing of resources where appropriate.

g. Present to PTO executive management, program sponsors, and customers how funds are projected to be allocated for information technology activities.

h. Focus the information technology activities into a concerted program designed to achieve PTO's business objectives.

i. Provide the PTO information technology program objectives and plans to a higher authority.

1.5 Plan Development

The PTO information technology planning process is an integrated activity that focuses on three different, but related levels. The strategic level focuses on providing a high level view of the direction of the PTO's information technology program and those planned activities over the long-term (five or more years). The operational level provides a more detailed view of those activities planned for the next two years and supports the PTO information technology budget submission. A more detailed description of those step by step activities necessary to implement an approved project is developed at the tactical or project planning level.

1.5.1 Strategic Information Technology Plan

The PTO has integrated strategic and operational information technology planning into one process which results in the development of a single, combined planning document. This document, the PTO Strategic Information Technology Plan, provides a high level description of how the PTO intends to use information technology to support its overall mission, goals, and objectives, and the resources necessary to implement the plan.

The PTO's combined plan is developed under the direction of the Chief Information Officer and meets the Department of Commerce's Senior Information Technology (IT) Official's requirement for strategic and operational planning. The PTO combined plan is submitted bi-annually. It is initially issued in May of each year to support the PTO's Secretarial budget submission to the Office of Management and Budget, and is updated and re-issued in December to reflect final programmatic and funding changes.

The development of the PTO's combined plan is accomplished in four phases: Issue the Call for a Plan, Collect the Data, Analyze and Consolidate Information, and Review and Approve the Plan.

a. Issue the Call for a Plan. During this phase, a formal written call letter was forwarded to agency-wide program sponsors requesting that, using last year's plan as the baseline, they submit updated narratives, milestone schedules, and funding projections for all projects currently underway as well as any new projects expected to be started during the next two fiscal years.

As a supplement to the detailed instructions contained in the call letter, the Department of Commerce's Information Technology Management Handbook was recommended as the primary source for additional guidance on submission preparation as well as specific suggestions on how to conduct the planning effort.

b. Collect Data. During this phase, agency-wide program sponsors made all necessary changes and updates to the prior year's baseline plan as well as added any new initiative write-ups that were considered appropriate. Important factors considered included the: "eleven" customer service standards established last year and discussed at length in Chapter 7; periodic guidance and direction received from the Commissioner and the Business Council throughout the year; latest approved funding levels for the FY1996 Operating Plan and the FY1997 Secretarial Budget Submission; results of the Executive Staff Strategic Planning Conference held last December; and results of the Group of 80 focus sessions held last February.

Participants in the Group of 80 focus sessions included most office directors, including Patent Group Directors and Trademark Directors. The focus sessions resulted in identification of 10 high-priority information technology-related initiatives which needed to be addressed in the next strategic planning cycle. All 10 were addressed by the PTO's automation program sponsors in their individual project plans contained in Chapters 5 and 6 of this year's IT Plan.

c. Analyze and Consolidate Information. During this phase, the Technical Policy, Planning, and Oversight Staff within the Office of the Chief Information Officer worked closely with the Program Sponsors and systems development organizations in finalizing their initial submissions and developing a consolidated plan. Important factors considered included alignment of proposed project plans with the PTO's longer range strategic vision in the information technology area as well as associated costs, risks, difficulties, and barriers.

d. Review and Approve the Plan. Under the direction of the Chief Information Officer, a top to bottom review of all proposed initiatives for the FY1996-FY2001 period was conducted, as there was not sufficient revenue to satisfy all the identified milestone objectives within published schedules. The Office of the Chief Information Officer, the Office of the Assistant Commissioner of Patents, the Office of the Assistant Commissioner of Trademarks, and the Office of Budget subsequently worked closely together to prepare a revised plan constrained by available funding. This revised plan was then submitted to the PTO's Business Council and Commissioner for final approval before forwarding it to the Department.

1.5.2 Detailed Project Plans

Detailed project (tactical) plans have been developed to support the projects identified in the Strategic and Operational Information Technology Plan. These project plans contain the greatest level of detail on day-to-day requirements for accomplishing the scope and objectives of the agency-wide information technology program. They also contain specifics on such tasks as design, development, training, telecommunications, testing, facilities, implementation, contingency support, and other related activities which serve the transition of projects from initiation activities through to production system operation. Specific guidance on the preparation of these plans is contained in the PTO's Project Management Manual.

1.6 Plan Organization

This document has been organized as follows to facilitate its use as a future reference tool:

a. Executive Overview. The executive overview is intended to be a stand alone document that provides a high level description of how the PTO intends to use information technology to support its overall mission, goals, and objectives; key planning assumptions and strategies; and the resources necessary to implement the plan. The overview also documents the major information technology initiatives planned over the next five years.

b. Plan Overview. Chapter 1 describes: the role of the current automation modernization effort in supporting the PTO mission; influence of the National Information Infrastructure (NII) on this modernization effort; scope and purpose of the plan; how this plan was developed, and how this plan is organized.

c. PTO Mission and Organizational Overview. Chapter 2 provides a detailed description of the PTO's mission, its associated legislative authority, and organizational structure.

d. Governing Strategies. Chapter 3 presents the PTO's governing strategies for managing its information technology resources as well as the assumptions and constraints under which the IT program will operate during the FY1996-2001 period.

e. IT Program Objectives. Chapter 4 presents the major objectives that the PTO intends to pursue to ensure a successful IT Program.

f. Ongoing and Planned General, Infrastructure, and Support Activities. Chapter 5 presents a description of all ongoing and planned staff, as opposed to line, management support activities, including general support (e.g., quality assurance, configuration management, and business process), infrastructure support (e.g., Patent, office automation, etc.), acquisition support (e.g., system development and maintenance support contracts), and general program management and administrative support (e.g., the Ohio's Contracting Staff and Technical Plans, Policy and Oversight Staff) .

g. Ongoing and Planned Systems Design and Development Activities. Chapter 6 contains a detailed description of all ongoing and planned design and development activities associated with agency-wide patent, trademark, and administrative information systems as well as a detailed description of the PTO's information dissemination expansion program currently underway.

h. Information Technology Customer Service Standards. Chapter 7 presents an update on the PTO's efforts this past year to implement the "eleven" information technology-related customer service standards it established during the Spring of 1994.

i. Master Implementation Schedule. Appendix I contains a master implementation schedule for key agency-wide IT initiatives covering the period FY1996-2001.

Chapter 2

PTO MISSION AND ORGANIZATIONAL OVERVIEW

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Chapter 2

PTO MISSION AND ORGANIZATIONAL OVERVIEW

2.1 Introduction

2.1.1 PTO Mission

The mission of the PTO is derived from the U.S. Constitution which says "The Congress shall have the power...to promote the progress of science and the useful arts, by securing for limited times to...inventors exclusive right to their discoveries." This mission is:

- To administer the laws relating to patents and trademarks in order to promote industrial and technological progress in the United States and strengthen the national economy.

- To develop and advise the Secretary and the Administration on intellectual property policy, including copyright matters.

- In cooperation with the International Trade Administration, to advise the Secretary and other agencies of the U.S. Government, such as the United States Trade Representative, on the trade-related aspects of intellectual property.

2.1.2 Mission Accomplishment

The PTO accomplishes its mission by examining patent and trademark applications, issuing patents, registering trademarks, disseminating patent and trademark information to the public, and encouraging a domestic and international climate in which intellectual property can flourish.

The PTO provides inventors and entrepreneurs with the protection and encouragement they need to turn their inventive and creative ideas into tangible realities. The PTO provides this protection of intellectual thought by:

- Playing a leadership role in intellectual property rights policy development.

- Providing customers with the highest level of quality and service in all aspects of PTO operations.

To accomplish these goals, the PTO recognizes that information technologies must be leveraged and better processes must be employed to enable the correct identification and cost effective storage of information, and to ultimately provide "instantaneous" access to this information when needed.

2.2 PTO Organization

To facilitate the support of its overall mission, the PTO is organized as follows:

2.2.1 Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

The Assistant Secretary of Commerce and Commissioner of Patents and Trademarks determines the policies and directs the programs of the Patent and Trademark Office and is responsible for all activities of the Patent and Trademark Office. The Assistant Secretary is also ultimately responsible for approving all information technology strategies and initiatives, although this authority may be delegated to the PTO Business Council, as appropriate.

2.2.2 PTO Business Council

The PTO Business Council coordinates, analyzes, and makes recommendations to the Commissioner on key cross-cutting issues facing the PTO. The PTO Business Council provides top-level management oversight and direction to the Information Technology Program and decides or makes recommendations to the Commissioner regarding information technology initiatives for approval, as appropriate. The Business Council reviews and recommends approval of the PTO Strategic Information Technology Plan, funding levels for the information technology budget, and approval of information technology policies. In addition, the Business Council coordinates the application and use of information resources consistent with the overall PTO strategic business goals and objectives; resolves conflicts among automation initiatives competing for information resources within authorized thresholds; and reviews designated AIS development and enhancement projects ensuring at each life cycle management milestone, that sound life cycle management principles and practices are being followed.

2.2.3 Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks

The Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks assists the Assistant Secretary in the direction of the Patent and Trademark

Office; provides administrative oversight to and coordinates the activities of assigned organizational elements; performs other duties as delegated by the Assistant Secretary; and performs the duties of the Assistant Secretary in the latter's absence.

2.2.4 Assistant Commissioner for Patents

The Assistant Commissioner for Patents provides administrative and policy direction to the patent and search and information resources operations which consist of assigned organizational elements. The Assistant Commissioner is assisted by three Deputy Assistant Commissioners. The Deputy Assistant Commissioner for Patents performs the duties of the Assistant Commissioner during the latter's absence.

2.2.5 Assistant Commissioner for Trademarks

The Assistant Commissioner for Trademarks provides administrative and policy direction to the trademark examining groups and related operations performed by assigned organizational elements. The Assistant Commissioner is assisted by a Deputy Assistant Commissioner who performs the duties of the Assistant Commissioner during the latter's absence, and who has direct responsibility for oversight of the Office of Trademark Program Control.

2.2.6 Associate Commissioner and Chief Financial Officer

The Associate Commissioner and Chief Financial Officer is the principal advisor to the Assistant Secretary on planning, budgetary, financial, and procurement matters; human resources, administrative programs, and quality services; information dissemination; oversees implementation of the Chief Financial Officers Act, the Federal Managers' Financial Integrity Act, and the Government Performance and Results Act, including the preparation of audited financial statements and performance measures; and is responsible for audit resolutions. The Associate Commissioner provides administrative and policy direction to assigned organizational elements. The Associate Commissioner is assisted by a Deputy Associate Commissioner for Administration and Quality Services, a Comptroller, and an Administrator for Information Dissemination. Key information technology-related organizational components within the Office of the Associate Commissioner and Chief Financial Officer are as follows:

a. Office of Information Dissemination. The Office of Information Dissemination develops, maintains, and disseminates a diversified portfolio of patent and trademark information to the public. The Office develops electronic information products

and services; distributes patent and trademark information of U.S. technological and economic activities; and provides information dissemination support services to PTO customers.

b. Office of Business Process Reengineering. The Office of Business Process Reengineering analyzes the Patent and Trademark Office's business enterprise and practices through the application of business process reengineering techniques, such as activity and simulation modeling, activity-based costing, and functional economical analysis. The Office provides central guidance, coordination, and assistance for documenting current processes; designing new processes to meet the user and customer requirements for Patent and Trademark Office products and services; researching, analyzing, and recommending policy options related to new processes; and developing plans for the transitioning from current processes to reengineered processes.

c. Office of Procurement. The Office of Procurement provides direction, guidance, and oversight for small-scale information technology systems acquisitions and associated contractor support services as well as all other non-information technology-related procurements. This includes overseeing and coordinating the development of annual acquisition plans for major procurement actions at both agency-wide and operating unit requirements levels; developing, preparing, conducting, negotiating, and administering contractual actions for a wide variety of equipment, supplies, and services. This Office also interprets and provides guidance on Departmental policies and regulations; establishes PTO policies and procedures covering various methods, types, and strategies of acquisitions including negotiated contracts, purchase delivery orders, bank card transactions, and imprest fund purchases; and monitors and evaluates procurement-related post-award activities.

2.2.7 Chief Information Officer

The Chief Information Officer is the principal advisor to the Assistant Secretary of Commerce and Commissioner for Patents and Trademarks on the architectural design and acquisition of supporting automated information systems and the underlying information technology infrastructure. The Chief Information Officer also develops strategic information technology plans and operating budgets; operates the Patent and Trademark Office's computer facilities, equipment, and telecommunications network; serves as the Patent and Trademark Office's Senior Information Resources Management (IRM) Official; provides technical direction for the reengineering of the PTO's business processes; and provides administrative and policy direction to all organizational elements reporting to the Chief Information Officer. Key information technology-related organizational components within the Office of the Chief Information Officer are as follows:

a. Office of System Architecture and Engineering. The Office of System Architecture and Engineering develops the foundation system architecture for the information technology infrastructure; develops detailed engineering designs that support the broad technical architecture by testing design alternatives; develops detailed specifications, and provides final engineering designs for production systems. The Office designs and implements communications networks; ensures the adequacy and reliability of the information technology infrastructure that supports applications, and plans the technological evolution of the PTO's AISs.

b. Office of System Development and Acquisition. The Office of System Development and Acquisition administers the project management structure for the development, test, implementation, and maintenance of the PTO's AISs. The office acquires information technology hardware and software products and services consistent with the PTO's strategic and operational information technology plans and underlying supporting information technology infrastructure.

c. Office of System Quality and Enhancement. The Office of System and Quality Enhancement establishes and administers programs for quality assurance, requirements management, and configuration management of application software and data; develops data administration procedures and standards; maintains corporate data and process models and data dictionaries; develops and executes system acceptance tests of system solutions to ensure that requirements have been met; prepares test plans and libraries; and establishes procedures, technical standards, software tools and training that support the automated information system development life cycle.

d. Office of the Administrator for Computer and Telecommunications Operations. The Office of the Administrator for Computer and Telecommunications Operations provides end-to-end PTOnet connectivity operations and technical support services; provides office automation support services; operates PTO's mainframe computer facilities; schedules computer facilities; installs, updates and controls all system software; performs system programming and data base administration services; and performs capacity planning and management services.

e. Technical Plans, Policy and Oversight Staff. The Technical Plans, Policy, and Oversight Staff coordinates the development and implementation of agency-wide information technology policy; annual strategic and operational information technology plans; supporting budget submissions; and associated program oversight and performance monitoring activities.

f. Contracting Staff. The Contracting staff provides direction guidance, and oversight for large-scale information technology systems acquisitions and associated contractor support services; ensures compliance with Federal Acquisition Regulations, and the Federal Information Resource Management Regulations, and other applicable laws, regulations, and orders; and assists designated Contracting Officer's Representatives in providing oversight to PTO contractors and subcontractors to facilitate compliance and performance.

Chapter 3

INFORMATION TECHNOLOGY GOVERNING STRATEGIES

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Chapter 3

INFORMATION TECHNOLOGY GOVERNING STRATEGIES

3.1 General

The PTO information technology policy is to centralize information technology program-related: planning, technical direction, oversight, policy formulation, system development and maintenance, acquisition of technology products and services, business process improvement, and day-to-day operational management of the PTO information technology infrastructure under the direction of the Chief Information Officer. The dissemination of associated information products and services to the public is under the direction of the Associate Commissioner and Chief Financial Officer. This management framework provides for the evolutionary application of new technology, and fosters uniformity throughout the PTO through standardization of hardware, software, and data to the maximum extent possible while ensuring responsive support.

The PTO also recognizes the role that individual employees play in identifying new and innovative information technology solutions. Innovations such as the "Examiner Toolbox" are an excellent example of how capabilities developed to support a few employees can be expanded to benefit PTO-wide activities. The information technology management framework established by the CIO through the Technical Reference Model and PTO's life cycle management policy provides the flexibility needed to encourage continued innovation while ensuring that new capabilities can be easily expanded beyond the developer's desktop and can be supported by the PTO information technology infrastructure and maintained by the CIO.

This chapter describes the governing strategies for managing PTO information technology resources, and the assumptions and constraints under which the Information Technology Program will operate during the planning period. The governing strategies are the fundamental principles and philosophies for managing PTO information technology resources and meeting the PTO's information needs.

3.2 Governing Strategies

The PTO's governing strategies for managing information technology resources are addressed under the following four elements: project management, application software, data, and information technology infrastructure (hardware, network, and system software). The PTO plans to integrate the management of the information technology infrastructure, application software and the data in the strategic, operational, and tactical

plans, while recognizing that each of these components has a separate and distinct life cycle.

3.2.1 Project Management

This element includes the overall management, control, and resource allocation of information technology projects. The governing strategies for project management are:

a. Matrix Management. AIS projects will be managed following matrix management concepts. The AIS project management organization will be adequately staffed to manage an AIS project. Matrix team roles and responsibilities include:

- Program Sponsor. Program sponsors are responsible for defining and validating customer requirements, for making resources available to support information technology program initiatives, and for reviewing the progress of AIS projects to ensure that all functional requirements are being satisfied in a timely and cost-effective manner.

- Steering Committee. A Steering Committee will be created to perform the duties of or assist the Program Sponsor when a major AIS project crosses organizational boundaries. Steering Committee members will be appointed by the Business Council or the Program Sponsor.

- Project Manager. Designated by the Program Sponsor, the AIS project manager directs and coordinates the business and technical aspects of each project including facilities, business processes, and business oriented job/task training. AIS project managers will be assigned for sufficient duration, possess the necessary skills, and be given ample authority under matrix management to direct project development and implementation.

- End-User. End-user participation and involvement is crucial to the success of each business process reengineering and AIS project; therefore, end-user involvement must be encouraged. Due consideration must be given to ensure that all internal, external, and legal customer requirements are adequately reflected in the automated solution.

- System Development Manager. The System Development Manager, appointed by the Chief Information Officer, is responsible for AIS design,

development, and deployment for all projects under the direction of a Project Manager. The Systems Development Manager also ensures that all AISs designed, developed, and deployed are consistent with the agency's strategic information technology plans.

b. Role of PTO Technical Personnel. PTO personnel will perform the project planning, assume a more substantive role within contractor-supported projects, and provide technical direction.

c. Operational Effectiveness. AISs will emphasize operational effectiveness and be directly linked to defined business objectives with identifiable performance measures. AIS projects will emphasize greater senior level and program sponsor involvement during the system development life cycle.

d. Benefit Delivery. AIS projects should be structured to deliver benefits to the customer as early as possible and be limited in scope to the extent practical in order to mitigate risk.

e. Life Cycle Management. AIS projects will follow established PTO Life Cycle Management (LCM) policies, procedures and standard system development methodology.

f. Project Management Control and Tracking. Each information technology project will be baselined in the PTO project management control system to ensure adequate visibility into actual progress and accurate tracking of project costs. The control system will allow management to take effective actions when the project's performance deviates significantly from the plans.

g. Acquisition. The acquisition of information technology products and services will be in accordance with pertinent laws and regulations (e.g., the FAR and FIRMR). The acquisition strategy will normally require full and open competition in procurement of information technology resources, purchase (rather than lease) of equipment, and will be awarded based on best value to the PTO. Adherence to current PTO standards, compatibility with existing and planned information technology infrastructure, and performance requirements will be primary considerations in the acquisition of new equipment and software products. Selecting an acquisition strategy that provides for timely procurement, while complying with applicable regulations, is critical to project success.

3.2.2 Information Technology Infrastructure

This element includes ongoing operations, modifications, augmentation, replacement, and maintenance of computer and communications equipment, network facilities, and system software. The governing infrastructure strategies are:

a. Open System Environment. The PTO will transition its information technology infrastructure to a standards based open system environment. The PTO Technical Reference Model, based on the National Institute of Science and Technology's Application Portability Profile, provides a comprehensive set of information technology standards, services, protocols, and standards-based products that define the target technical environment.

b. Client-Server Architecture. The PTO will pursue a distributed client/server architecture.

c. New Technology. The PTO will evaluate new technology after it has been introduced into the marketplace and use it where it is feasible, cost-effective, and compatible with the PTO information technology infrastructure.

d. Use of PTO Information Technology Infrastructure. PTOnet is the common-user, data communications network which will provide workstation-to-workstation and workstation-to-computer communications for all PTO users. An AIS project's network and computer resource requirements must be satisfied by the PTO's information technology infrastructure whenever practical.

e. System Software. System software is used to execute and enhance the management of hardware and/or application software and includes operating systems, data base management systems, performance monitoring and diagnostic software, capacity planning tools, network management, compilers and other software products. The PTO will select and implement standard system software and obtain site software licenses.

3.2.3 Application Software

This element includes the analysis, design, development, implementation, operation, maintenance or enhancement of application software. The governing strategies are:

a. Business Process Reengineering. The PTO will apply business process reengineering as a continuous, incremental and evolutionary productivity-enhancement process. Business process reengineering will precede application software design and development whenever practical.

b. Demands for Application Software. New demands (enhancements or new systems) for application software will be satisfied based on the analysis of costs, benefits, and feasibility of alternative solutions.

c. Technical and Performance Standards. Application software will be developed within the bounds of current and planned processing standards as defined in the PTO Technical Reference Model and capabilities of the PTO information technology infrastructure. AIS project managers and system development managers will adhere to approved standards and refrain from using vendor-unique extensions to the standard unless it can be shown to be cost-effective over the life of the application.

d. Application Software Control. Application software will be controlled with respect to access, authority to modify, and ability to operate programs. This control will be accomplished through standardized access control software and procedural controls to ensure security of AISs independent of code.

e. Software Independence. Software will be developed, documented, and maintained in such a manner as to reduce reliance on individuals or organizations that operate, modify, or enhance the software.

f. Software Process and Tools. System development life cycle methodology, processes, and supporting tools will be standardized throughout the PTO.

g. Commercial Application Software Packages. Existing public domain or commercial software packages that can satisfy a user's needs and can operate on the PTO's Information Technology Infrastructure should be used as opposed to new application software development. All commercial proprietary software used within the PTO are off-the-shelf products that are procured through routine acquisition procedures.

h. Security. Security of all sensitive information shall be addressed explicitly in each life cycle management phase.

i. Software Reuse. Application software will be constructed from previously developed software life cycle components whenever practical. The reusable components include data and process models, requirements design specifications, documentation, test suites, tools, and other components.

j. Prototyping. Prototyping of application software may be used to refine requirements and enhance user and developer understanding and interpretation of requirements or validate portions of the architecture against the functional requirements and technical specifications. Application software developed using prototyping techniques must be fully tested and documented prior to being placed into operational use.

3.2.4 Data

This element includes the standardization, control, and integrity of data being stored or manipulated. The governing strategies for data are:

a. Standard Data. The PTO will promote data consistency and standardization and minimize data redundancy throughout the organization by developing standards for data element names, definitions, values, formats, metadata, and documentation in a central repository and in data bases. The standard data elements will be derived from approved data models.

b. Data Repository. The PTO will standardize and register data models and data elements in a data repository system which will facilitate data sharing, data reuse, and interoperability among AISs. The data repository system is the official definition of PTO data. It may be copied, but will be centrally maintained.

c. Electronic Data Interchange. The PTO will pursue electronic data interchange agreements with other agencies, the World Intellectual Property Office, the European Patent Office, the Japanese Patent Office, other worldwide intellectual property offices, and appropriate private sector organizations.

d. Data Control. The PTO will provide for the confidentiality, reliability, and overall security of data by limiting access to authorized users, programs, processes, and networked AISs. Data will be controlled with respect to who has access and the ability to modify or delete data and data elements.

e. Data Integrity. The PTO will improve the integrity and usage of data through data structuring rules and standards, and coordinating data element definitions among program offices.

f. Data Entry. The PTO will minimize duplication in collecting, processing, storing and distributing data and implement single point of entry for data.

g. Data Base Management System. The PTO will transition to a standard data base management system (DBMS) for all applications wherever cost-effective and feasible. Exceptions will be made when database capacity and performance requirements exceed the capabilities of the standard product. A second standard DBMS will be employed to support end user computing applications. All legacy systems will be maintained on the most current release of the DBMS being used until the transition to the standard DBMS is completed.

3.3 Assumptions and Constraints

The Information Technology Program will continue to operate under the following assumptions and constraints during the FY1996-FY2001 planning period.

3.3.1 Increasing Demand

Program sponsors will increase their requests for development of new AISs and changes to existing AISs to provide more timely and accurate data to better support PTO missions and functions.

3.3.2 New Technology

New technology will continue to evolve and enable users to have faster access to more timely data which will trigger demands to increase the use of information technology to help manage programs.

3.3.3 Data Communications

The present trend toward greater reliance upon data communications to access both internal and external databases through PTOnet will continue.

3.3.4 AIS Security

Greater emphasis will be placed on providing adequate AIS security as the PTO begins the transition to electronic filing and processing of patent and trademark applications.

3.3.5 Resource Availability

The ability to satisfy user demands will continue to be restricted by the availability of resources (funds and personnel).

3.3.6 Information Technology Personnel Skills Requirements

Information technology personnel skills required will increase as the transition to more complex on-line client-server data base systems continues.

3.3.7 Program Sponsor Role

The program sponsors and users will continue to play a significant role in the development and maintenance of AISs.

3.3.8 Reliance on Contractors

The PTO will continue to rely on contractors to provide needed skills. This will require the PTO personnel to acquire additional skills to manage contractor performance.

3.3.9 Training Lead Time

There will continue to be a long lead time to train information technology personnel to become proficient in high skill areas.

3.3.10 Fluctuating Income Stream

The PTO is totally reliant upon user fees for its income which can fluctuate within and between fiscal years. Income received above or below plan may change information technology initiative priorities and schedules due to changes in income streams.

3.3.11 Public Access to Data

There will be an increased demand by the public to access patent and trademark data. The fees to be charged for access to the PTO's data by the public will continue to be a policy issue.

3.3.12 Information Technology Budget

The funds available for acquiring information technology resources will be less than the demand for resources during the planning period.

3.3.13 Electronic Filing

The implementation of electronic filing will require the resolution of a multitude of issues associated with electronic records and electronic data interchange. These issues include, but are not limited to: electronic signature; evidentiary issues associated with electronic records; transborder data flow; trading partner agreements; electronic funds transfer; confidentiality; data integrity; availability; and data time stamping. Resolution of these issues may require changes to regulations and office procedures.

Chapter 4

PTO INFORMATION TECHNOLOGY PROGRAM OBJECTIVES

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Chapter 4

PTO INFORMATION TECHNOLOGY PROGRAM OBJECTIVES

4.1 General

A key to the concept of planning for the effective use of information technology resources is the establishment of objectives. These objectives provide direction to the PTO's Information Technology Program and are aimed at improving how information technology products and services are produced and provided. This chapter identifies the objectives and addresses the progress made toward accomplishing the objectives.

There are three major assumptions which influence the objectives and future direction. First, information technology funding will increase beginning in FY1997. Second, information technology personnel will require an increased level of knowledge and technical skills to deal with the increasingly complex computer and network communications environment. Third, program sponsors and customers will continue to play a significant role in the design, development, and maintenance of AISs.

4.2 Objectives

The following nine Information Technology Program objectives provide the basis for defining the future direction of the PTO Information Technology Program. The objectives will be continually reviewed by PTO management and updated as appropriate. Some of the objectives have clear cut solutions, while others require further study. The problems associated with the need to define technical processes, procedures, standards and supporting products require immediate attention. A synopsis of the need for the objective and the progress made is provided.

4.2.1 Implement a Tailorable System Development Life Cycle Management Process

The Problem

In the past, the PTO had no single documented process to develop, deploy, and maintain automated information systems (AIS). Each application development group has defined its own and/or relied on a contractor to define processes, standards, and supporting tools. This has resulted in the implementation of AISs that are costly and difficult to maintain and cannot adapt to take advantage of advances in technology.

Proposed Solution

A PTO-standard and tailorable system development life cycle is needed to improve productivity, measure and improve performance, and take advantage of modern system

development techniques and tools. This process must include senior management oversight and program sponsor direction. The end goal is to deliver quality software products when promised and within cost estimates. All PTO AIS projects must use this life cycle methodology, the technical standards and guidelines, an established standard toolset, and training for in-house staff and contractors in order to realize total benefits. Implementing a standard process comes in three parts: 1) defining a tailorable process; 2) adopting a standard tool set; 3) orientation and training of people. The process must be defined with a foundation document and supporting guidelines so that people know what to do; a standard tool set is needed to make the process faster and more efficient; and people must be oriented and trained.

Status of Effort

The PTO established a Software Engineering Process Group in January 1994 to define and institutionalize a PTO-standard system development life cycle management (LCM) process. The PTO completed the first draft of the LCM Manual in July 1994 with the assistance of the Software Productivity Consortium. This manual is derived from the best practices contained in the Department of Commerce's Life Cycle Management Guidelines, Department of Defense life cycle management guidelines, the Software Engineering Institute's Capability Maturity Model, and the PTO's Evolutionary Development Guidebook. Process teams have been established and applied the Software Engineering Institute's software process definition techniques to define high level activity models of the life cycle process.

The Life Cycle Management Manual is complemented by Information Technology Standards and Guideline publications that provide detailed "how to" technical guidance to project and system development managers. These guidelines cover such topics as functional and data requirements definition, configuration management, quality assurance, testing, developing the Information Technology Standards and Guideline publications through the use of in-house personnel and contractor support.

In the past year, the PTO has made significant progress on all three parts of implementing a standard process. The PTO has now completed the system development life cycle process definition through the deployment phase and plans to complete the entire life cycle process definition by September 1996. The CIO has also mandated the use of the LCM Manual through the deployment phase for all new projects. The PTO plans to publish the LCM Manual in January 1996 and complete supporting Technical Standards and Guidelines by September 1996.

4.2.2 Automate Computer Center and Network Operations

The Problem

The PTO operates a centralized computer facility which includes IBM-compatible and UNISYS mainframes and a variety of UNIX processors interconnected by a TCP/IP-based Novell network. The PTO also has stand-alone UNIX-based processors in user workspace. This heterogeneous compliment of equipment, and accompanying software products, are costly to maintain, labor intensive to operate and subject to human error during operation. Additionally, the problems just stated will be amplified in the coming years due to increased demand for automation services coupled with decreased staffing allocations.

Proposed Solution

Automated software tools are commercially available for most of the installed equipment operated by the PTO. The PTO will determine the extent to which all computer center and network operations can be automated, examine the alternatives, and implement as close to a "lights out" operation as possible. This will include all data center operations functions including the monitoring and operation of mainframes, mini-computers, file servers and application servers. Software will be acquired and installed that will increase the quality and availability of automation products and services, while decreasing the requirement for operational personnel.

Status of Effort

The PTO made an initial assessment of how automated operations could be implemented to reduce costs and improve services. Based on that assessment, the PTO will evaluate commercially available software tools to meet the requirements of automation operations. Based on that evaluation, the PTO will generate an Automated Operations Implementation Plan in the 3rd quarter of FY1996. As part of the evaluation, the PTO will install a small compliment of automated monitoring tools. These tools will help focus the requirements for procurement of enterprise-wide automated solutions. In addition, the PTO will install an Automated Tape Library (ATL) in FY1996.

4.2.3 Implement a Responsive End User Computing Program

The Problem

The PTO has experienced a rapid expansion of the use of desktop workstations that has outstripped the PTO's capacity to provide adequate support. PTOnet had grown from 170 users in 1991 to approximately 4,200 users in August 1994 without a concomitant increase in the technical support infrastructure and supporting budget. With the rapid changes in available technology, and the expanding computer literate workforce, more and more PTO employees rely on desktop computers to expedite their work, and thus more uses for these resources are explored. As a result, it becomes increasingly difficult to accurately project operational requirements in support of office automation services. Expanded operational support is needed to improve Workforce productivity. During the next three years, the PTO will greatly expand the use of the network to support office automation and AIS functions on desktop computers. The capability of the network to respond to these requirements directly impacts the patent and trademark examination activities and must be significantly improved.

Proposed Solution

Key components of a responsive end user computing program are: 1) PTO standard products and hardware configurations; 2) reliable PTOnet service; 3) PTOnet resource conflict resolution body; 4) properly organized and adequately staffed support functions; 5) an adequately resourced training program; and 6) a PTO policy that establishes standard products that will be supported and procedures for the operation of an end user computing program.

Status of Effort

In February 1994, the PTO initiated actions to improve the office automation Centralized Help Desk functions by concentrating on reducing the backlog of problems and adding contractor-provided support. In June 1994, the PTO completed an analysis of PTOnet service problems and developed both near term and long term solutions to the identified problems. Actions completed thus far include: establishing customer and automation focus groups; revising the help desk philosophy from "taking the problem call and passing it off" to "following the problem call through resolution"; budgeting funds from development activities to adequately funding operations; identifying projects to improve network security; acquiring network diagnostic software tools; and upgrading the current suite of office automation application software and providing additional microcomputer application software in support of end user requirements.

The PTO is currently exploring the possibility of: establishing a single contract for hardware and software as well as microcomputer maintenance services; and expanding the scope of this contract to include additional related services (hardware relocation, inventory tracking, system upgrades, short term replacement/loaner services, etc.). A Testing and Evaluation Facility is also being created within the Office Automation Support Division to provide technical support in the testing, evaluation, and recommendation of hardware and software Office Automation technologies for use within the PTO.

A Voice Response Unit will be installed to support the Help Desk. This unit will enable OCIO to better communicate the status of PTOnet and the attached mainframes and file servers, and to better serve the customer by directing them to the individual best suited to address the customer's problem or concern. The telephone system on the Help Desk has been upgraded to handle up to fifteen calls concurrently.

The PTO plans to redesign PTOnet as well as replace its present server subsystem and integrate all existing networks into a standards-based open system architecture during FY1996.

4.2.4 Transition to an Open System Standards Based Architecture

The Problem

The PTO's information technology infrastructure is a heterogeneous collection of incompatible mainframes, minicomputers, and microcomputers with incompatible COTS software products. This infrastructure is difficult and costly to operate and maintain and parts are wearing out. It has been managed on a piecemeal basis (e.g., often tied to a specific application rather than managing the infrastructure separately and dictating a set of technical standards that the applications will use in their development).

Proposed Solution

The PTO must develop a standards-based open system information technology infrastructure to address this problem. Open system standards define the format in which data is exchanged, remote systems are accessed, and services invoked. The acceptance of open system standards supports the creation of system architectures that can be built from technology components available from many vendors. The OCIO will develop a PTO-wide program to manage the information technology infrastructure.

Status of Effort

As a first step in the transition to a standards-based open system architecture, the PTO published a Technical Reference Model. The Model is based on the NIST Application Portability Profile from October 1995. The Model is a comprehensive set of information technology standards, services, protocols and products that define the target technology environment for the acquisition, development, and support of PTO's AISs. The model includes commercial products upon which the PTO will standardize. The model will evolve as technology changes and additional standards and products are identified and adopted.

During Fiscal Year 1996, the OCIO will develop a migration plan that will detail the activities, timeframes, and responsibilities for moving from our current environment to a standards based, open system architecture. These activities will address the following major, standards-based infrastructure components: text search service; end user computing environment; document management; workflow management; expert system; network server environment; digital signature; data security/encryption; and external, bi-directional access. It will also include the transition of the PTO's critical applications to an open system environment.

4.2.5 Implement an Integrated Strategic and Tactical Information Technology Planning Process

The Problem

The PTO currently does not have an integrated strategic and tactical information technology planning process that supports PTO corporate objectives, integrates requirements across the PTO, solicits user involvement in all phases of the planning and evaluation process, and is closely tied to the budget process.

Proposed Solution

The Office of the Chief Information Officer (OCIO), plans to work closely together with the Comptroller and agency-wide program sponsors to restructure the current planning and budget process into a workable formalized vehicle for making information technology (IT) investment decisions as well as documenting the associated technical and business risks. Key tenets of the new process include: planning directs the budget process, not vice versa and the budget is closely linked to the agency's mission, strategic direction and performance measures. The OCIO will perform an in-depth analysis of the

current planning and budget documentation and decision process and restructure this process as needed.

Status of Effort

During this past year, the PTO strengthened the information technology planning process by working closely together with program sponsors (including employing the use of customer focus sessions) to develop fiscally constrained project plans and obtain Business Council approval. During FY1995, a significant reorganization within the Office of the CIO was initiated to provide for better integration of the planning and budget functions.

Using the past year's experience as the baseline, the PTO plans to complete the following: 1) in-depth analysis and restructuring of the current planning and budget documentation and investment decision process, 2) preparation and publication of an agency-wide policy that establishes clear requirements and responsibilities, 3) development of a fully integrated information technology planning and budget on-line system to facilitate the timeliness and quality of the associated data gathering effort.

4.2.6 Establish Clear and Definitive Information Technology Policies

The Problem

The PTO does not currently have clear and definitive information technology policies within the PTO nor a process for assuring compliance. This, in turn, imposes excessive risk on the execution of current long range strategic plans and initiatives. It also adversely impacts workforce productivity and coordination of planning activities.

Proposed Solution

To respond to this problem, the PTO plans to develop and publish clear and definitive policies for nearly every information technology program area.

Status of Effort

The PTO plans to complete a review of existing Federal regulations and guidelines and has identified information technology program areas that require implementing policies. The PTO will adapt the policy guidance contained in the Department's Information Technology Management Handbook and policy documents gathered from other Federal agencies for PTO use wherever practical.

The PTO has published a data administration policy and drafted policies on life cycle management and strategic information technology planning. These policies have been coordinated for review and approval by the Business Council.

4.2.7 Implement Project Management and Cost Tracking System

The Problem

The PTO has established a project management system that provides visibility into the actual progress of each project. This management system currently includes a cost tracking system which ties schedule data to cost data via a Work Breakdown Structure. The actuals collected include PTO and contractor labor costs and other direct costs associated with each automation project. These actual costs need to be compared to the budget to evaluate performance. All schedule and cost data should be made available to PTO managers.

Proposed Solution

Budget and schedule data for all information technology (IT) projects needs to be loaded to the automated project management system. This data should include not only the current fiscal year, but also funds obligated in prior fiscal years that are being spent in the current fiscal year and the budget for future fiscal years. An easy-to-use Windows-based network version of the scheduling application will be implemented to provide PTO managers with the capability to perform "what-if" schedule analysis and to review performance data on-line at their desks for all information technology projects.

Status of Effort

The PTO began capturing PTO employee costs in October 1994. The PTO is also in the process of drafting a policy directive that will require program sponsors to ensure that information on each AIS or information technology project is entered in a timely manner to the PTO's project management control system. This policy will also require the CIO to administer the project management control system to provide visibility into the actual progress of each AIS and information technology project and: 1) track actual cost and schedule results and performance against project plans, and 2) ensure that corrective actions are taken and managed to closure when actual results deviate significantly from plans.

Currently cost actuals are being collected by program code for all AIS and information technology projects. In addition, schedule and cost data are being provided for input in the project management system from organizations outside of CIO that are involved in

information technology projects. Current year budget by program code is loaded in the project management system. Both actuals and budget are mapped to the Work Breakdown Structure. Development work has begun which will allow managers to access project management data at their desks. A Windows-based network version of this planning and scheduling system will be made available during the second quarter of FY1996.

4.2.8 Develop a Strategy to Upgrade the Skills of PTO's Information Technology Personnel

The Problem

Many current PTO in-house staff need substantial training to become proficient in modern information technology tools, techniques, methodologies, and systems.

Proposed Solution

The PTO will initiate a more controlled and structured approach to information technology training than it has in the past. This includes developing a standardized process for identifying individual and organization-wide training requirements as well as prioritizing and approving associated training requests and controlling associated costs. The process will begin with identification of the core competencies required for information technology professionals. After a skills inventory and assessment, the training program will be developed and implemented. It will be coordinated with the PTO University Certificate Programs and on-going training provided by the Workforce Effectiveness Division. Key products will include the development of an annual information technology personnel training program plan and individual training plans, incorporation of training into performance plans, and annual assessments of organizational and individual progress.

Status of Effort

In FY1995 the PTO initiated PTO University Certificate programs at both the undergraduate and graduate levels. These programs provide professional training for information technology specialists and users. The George Washington University is providing the Masters-level Certificate Program in Information Systems Management, and the Northern Virginia Community College Certificate Program was expanded to include an Associate in the Arts program for Information Systems Technology.

The OCIO is defining the core competencies for all information technology personnel. The core competencies will determine the training program needs and content. The

Technical Reference Model will help identify specific technologies and products that PTO personnel need to be trained in. Additionally, and in coordination with that effort, specific training needs for FY1996 are being identified. Training will be offered to CIO employees and others throughout the PTO who are involved in information technology. The objectives of the FY1996 training will be to increase the level of understanding about the IT processes and tools in use at the PTO.

4.2.9 Provide Effective Access to Patent and Trademark Information

The Problem

As an integral part of its mission, the PTO must assure that patent and trademark information is available to all sectors of society that have a need for and can use the information. The PTO must strive to meet the challenges of today's technologies by making information available in the most useful forms and at reasonable prices, while recovering costs associated with the dissemination process.

Proposed Solution

The PTO will provide a balanced approach to information dissemination based on the following three components:

- development and production of electronic information products to be provided directly to the public, or to be used by the public in local search facilities and Patent and Trademark Depository Libraries (PTDLs),
- sale of copies of data bases developed for internal use to private sector companies who repackage the data and ensure its availability to a wide audience of users,
- reliance on the nationwide network of PTDLs to provide broad public access and support to users of PTO information.

Status of Effort

The PTO, since 1987, has taken advantage of CD-ROM technology to provide access to patent and trademark information. Approximately 40 text and 150 image discs are produced annually, and are sold to the public. An electronic bulletin board service provides dial-up modem access to information contained in the *Official Gazette* and to announcements regarding patent and trademark services. The PTO makes 20 years of searchable patent bibliographic text data (1.68 million documents) available on the Internet via the PTO Home Page (http://www.uspto.gov/) at no charge to the public.

The PTO sells over 50 subscriptions to patent and trademark data bases on magnetic tape to private sector vendors who repackage the data, often adding value, and sell a variety of products and services to the public.

The network of 80 PTDLs around the country use PTO-produced CD-ROM products as indexes to numeric collections on microfilm, on CD-ROM, and in gazettes. The PTO offers on-line access to its APS Text data base to all of its PTDLs, with 25 now subscribing to this service. The PTO has established partnerships at the Sunnyvale, California Center for Innovation, Invention, and Ideas and the Detroit, Michigan Great Lakes Patent and Trademark Center, where the public has access to APS Text, APS Image, and video conferencing to allow PTO's customers to meet with PTO examiners without traveling to Washington, DC.

The PTO is seeking input from its customers on how it can maximize the potential of its information dissemination programs and improve on its products and services. During the coming year, the PTO will analyze the existing information dissemination program in light of new and existing technologies, and will publish its policy for comments by the public prior to finalizing it.

Chapter 5

ONGOING AND PLANNED GENERAL, INFRASTRUCTURE, AND ACQUISITION SUPPORT PROGRAMS

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5.1 General Support (PT-96-02-N)

This section describes AIS life cycle management activities that support all PTO AISs. These activities include APS transition management and other related contracts; cross-cutting software such as the Generalized Image Service (GIS); data support activities such as the Document Management System, data management, and data capture efforts; quality management and control activities provided through Systems Acceptance Testing/Independent Verification and Validation, Quality Assurance (QA), Configuration Management (CM), and Integrated Computer Aided Software Engineering (ICASE) tools; security efforts; overall programmatic guidance provided by the Project Management, Technical Policy, Systems Architecture and Business Process Re-engineering staffs; and PTO-wide activities such as records management and disaster recovery.

5.1.1 Transition Management

In FY1997, a new System Development and Maintenance (SDM) contract will be awarded to: 1) replace the current APS Systems Integration contract, and 2) acquire new SDM support for the PTO's non-APS systems. The PTO must be assured that the contractor(s) hired under the new SDM contract have the material and knowledge necessary to take full responsibility for maintenance of APS before the current APS contract expires. The PTO must have the same assurance about the non-APS systems. However, the time-critical aspects of the current APS contract do not apply.

The months just before APS contract expiration have been identified as a contingency period of overlap to organize and document APS contractor responsibilities and functions. To ensure an orderly transfer if a different APS contractor is hired, the possibility of a transition must be carefully prepared for, planned in detail, and closely managed.

Transition Management includes the planning of and preparing for the transfer of both the APS and non-APS work products (hardware, software and documentation) along with the on-going software maintenance to a potential new SDM contractor. Transition Management includes readying for a potential transfer of the services, processes, and functions currently performed by the APS contractor.

a. Description. There are six major transition tasks: 1) APS transition planning, 2) non-APS transition planning, 3) configuration management system implementation,

4) requirements traceability matrix system implementation, 5) APS work product improvement, and 6) transition execution.

1. APS Transition Planning. The current APS contractor's on-going responsibilities include: 1) receipt and installation of new APS hardware, 2) maintenance of APS software and documentation, 3) internal functions such as quality assurance and configuration management of all APS work products, and 4) services, such as technical consulting. A major portion of APS transition is the independent review of APS documentation, definition of a basic transition documentation set, and evaluation of the accuracy and completeness of that documentation set.

2. Non-APS Transition Planning. The hardware, software and documentation for the PTO's non-APS systems will be reviewed and plans formulated for their possible transition to a new SDM contractor. The set of documents for each application system to be transitioned will be defined and evaluated for accuracy and completeness. All software maintenance and support task orders in progress, or in post-APS transition, will be reviewed for consideration in light of the transition.

3. Configuration Management System Implementation. To improve the PTO's ability to manage the configurations of hardware, software and documentation, the PTO acquired the automated configuration management tool PCMS. Using this tool, some configuration management functions now performed by development contractors will be transitioned to the PTO and the IV&V contractors. Other configuration management functions will be performed, and better controlled by, the PTO. PCMS activities include:

- Proof-Of-Concept - Pilot projects to prove PCMS implementation approaches.
- Documentation - Analysis, definition, load and implementation of APS document processing, tracking and configuration management control using PCMS.
- Hardware - Analysis, definition, load and implementation of APS hardware processing, tracking and configuration management control using PCMS.
- Unix Software - Analysis, definition and implementation of APS Unix software processing, tracking and configuration management control using PCMS.

- Amdahl Software - Analysis, definition and implementation of APS Amdahl software processing, tracking and configuration management control using PCMS.

- SCO-Unix Software - Analysis, definition and implementation of APS SCO-Unix software processing, tracking and configuration management control using PCMS.

- Non-APS Software - Analysis, definition and implementation of non-APS software processing, tracking and configuration management control using PCMS.

4. Requirements Management (RM). The PTO needs to better manage the functional and performance requirements of its AIS. The RM responsibilities of the present APS contractor will be transitioned to the PTO. To do this, the PTO is developing a functional process to manage and process requirements in-house, and to use an automated tool as an integral part of daily requirements management and processing. The PTO acquired the automated requirements tool Requirements Traceability Matrix (RTM). Implementation of a new requirements process and RTM will have a significant impact on current requirements-based procedures which will require careful preparation and detailed planning. RTM activities include:

- Proof-Of-Concept - Prove various RTM implementation approaches through the use of a pilot project.

- Functional Process Development and Implementation - Develop and implement a new functional process that brings about improved requirements management and processing and RTM usage as an integral part of daily business.

- Requirements - Analyze, define, load and implement APS requirements processing, tracking and control by PTO developers using RTM.

5. Work Product Improvement. The PTO will review the quality of the documents and written procedures that must be transitioned to the new SDM contractor. Documentation will be reviewed to determine if it is up to date, complete, and accurate. The documentation and written procedures must be in a condition that is acceptable to the new SDM contractor.

6. Transition Execution. Additional work will be required of both current contractors and the SDM contractor(s) to make both the APS and non-APS transitions

successes. This work will include PTO and SETA contractor oversight of transition activities as well as the actual transition of work products, services, functions and processes. The actual transition effort must be closely monitored to ensure that it is being performed in a timely and effective manner.

b. Justification. If this project is not funded, the condition of the AIS requirements and supporting documentation and the PTO's ability to manage those requirements will not be improved. Any identified failings or weaknesses in AIS work products will not be corrected. Preparation of hardware, software, and documentation will not be completed for transition to a potential new SDM contractor. This could adversely impact the PTO's goal of enhancing examination quality through workload and process improvement.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
APS Strategic Transition Plan			06/94
APS Transition Implementation Plan 1.0	02/95		04/95
APS Transition Plan 2.0	05/95	03/96	
Non-APS Transition Implementation Plan	10/95		10/95
PCMS Implementation Planning and Activity Coordination			04/95

5.1.2 Metacomputing Center

The Metacomputing Center will consist of two or more autonomous high performance computers connected by a high performance network and acting as a single problem solving system. Systems that incorporate computers from multiple vendors and different architectures will be used. Research will be conducted in several areas.

The first area of research will develop innovative, reliable, and robust distributed computing services that enable the computing/communication complex to rapidly re-configure, allocate, and manage resources as well as adapt to dynamic load and environment. The computing/communication complex will tolerate a limited set of failures. Of importance is the integration of security mechanisms across all aspects of the Metacomputing Center. A second area of research is the innovative application of emerging technologies in digital libraries and electronic commerce as applied to complex document handling within Federal agencies. In particular, techniques for electronic

submission of complex documents that include formatted text and diagrams, the ability to search and retrieve such documents, and the ability to protect the intellectual property contained within said documents will be investigated. The PTO databases are examples of such complex documents. Topics of interest include, but are not limited to: textual analysis searching, concept searching, relevance ranking and feedback searching, techniques for searching non-textual databases, and human-computer interfaces to complex search applications.

The Metacomputing Center will be capable of supporting, demonstrating, and evaluating a diverse set of experimental applications oriented toward defense and other Federal agency needs. Clear and well defined experiments will be used to evaluate options in system architectures, network architectures, storage architectures, and complex document handling, search, and retrieval, among others. Research projects of special interest will include complex document management and processing, distributed simulation, information visualization, telepresence, and telemedicine.

The Intelligent Metacomputing Center concept includes issues of cross agency and cross business collaboration. Collaborative efforts including Government Agencies and contractor organizations in the Washington, D.C. region will be pursued. Collaborative efforts will experiment with, and evaluate, a variety of techniques for sharing processing and database resources. The integration of techniques for maintaining the privacy, integrity, and security of information and resources held in the Metacomputing Center are of particular interest.

5.1.3 PTO Document Management System

A Document Management System (DMS) is a full set of client tools, middleware, and back-end services which support the authoring, routing (workflow), storage, and retrieval of documents within an organization. Documents can be raster image or text based formats. The PTO-wide Document Management System program represents the logical continuation of the Generalized Image Service (GIS) 1.0 and 2.0 projects and is a series of activities which will replace existing PTO custom-built image-based applications such as the APS search and retrieval of patent data, including search access to class/subclass document image indices (the inter-document relationships) stored in the host Display Index RETrieval (DIRET) files with a single (or minimal number of) Commercial-Off-The-Shelf (COTS) DMS. This program assures a successful COTS transition is achieved, including meeting performance and scalability requirements through the PTO-wide DMS projects such as DMS testbed, data conversion, process conversion, infrastructure upgrades (components which must be modified and/or replaced in order to accommodate a DMS), and DMS-related training. The PTO-wide DMS will be complete when CAS, CSIR and other PTO image-based legacy systems are successfully ported

(and integrated) to the PTO-wide DMS. The list of PTO-wide DMS applications include, Pre-Grant Publications (PGPub), Patent Trademark Copy Sales (PTCS), Trademark Search and Retrieval (XSEARCH), RAM/Cash Receipts, Deposit Accounts (CRDA), Executive Correspondence System, Procurement Desktop, and the Patent and Trademark Assignment System (PTAS).

A PTO-wide DMS will be procured under an acquisition task which will interpret and allocate requirements from the GIS 2.0 Requirements Specification to discriminate/select between various vendor's integrated Document Management System (DMS) applications, products, tools, and services, and determine the tailoring necessary to implement USPTO-specific tasks, such as search and retrieval of legacy data including search access to class/subclass document image indices (the inter-document relationships) stored in the host Display Index RETrieval (DIRET) files.

Once in place, the PTO-wide DMS becomes a critical infrastructure component which will control the load of APS text and image data; manage the data stored on the APS; and facilitate the dissemination of APS data to the public and other customers on demand. It will ultimately support all major USPTO applications which includes: Pre-Grant Publications (PGPub), Patent Application Management (PAM) System, and the Patent and Trademark Assignment System (PTAS). PGPub is currently being developed Viewstar. PTAS has been deployed using the ViewStar DMS. The Executive Correspondence and the Procurement Desktop systems have been deployed using Wang's Open Image DMS. Therefore, careful consideration will be given to this product vis-a-vis GIS performance needs, as well as extensibility and scalability. The long term goal is to have all of these applications be supported by a single DMS, either directly using the same vendor or through future conversion, as appropriate.

a. Description. The PTO-wide DMS will be a commercially available suite of COTS software that manages the life-cycle of documents including: data capture (either via scanning or by importing electronically filed documents), cataloging, tagging, storing, processing (including workflow), and retrieving. Documents can be images, text, or dynamic executable files. The DMS architecture will provide client tools, middleware, and back-end services separated through published application programming interfaces (APIs). The system will run on networked infrastructures and should provide protocol independence, location-less file access, security, and storage management.

b. Justification. The PTO-wide DMS will allow the USPTO to replace existing proprietary-based systems, such as CSIR, with COTS products consistent with the Office of Systems Architecture and Engineering direction. In addition, COTS DMS will support future planned functionality such as the electronic generation of Standard Generalized

Markup Language (SGML)-based mixed mode documents and Electronic Data Interchange (EDI).

Once in place, the PTO-wide DMS becomes a critical infrastructure component which will ultimately support all major USPTO applications. The list of DMS applications includes: Pre-Grant Publications (PGPub), Patent Application Management (PAM), Trademark Information System (TIS), Patent Trademark Copy Sales (PTCS), and the Patent and Trademark Assignment System (PTAS). PGPub is to be implemented using a DMS. However, its short lead time (operational by January, 1996) obviates a long-term procurement process which is necessary for GIS. PTAS is currently using ViewStar. Therefore, careful consideration will be given to this product vis-a-vis GIS performance needs, as well as extensibility and scalability. The long term goal is to have all of these applications supported by a single DMS, either directly using the same vendor or through future conversion, as appropriate.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Complete PTO-Wide DMS Concept Analysis		12/96	
Establish DMS Testbed		FY96	
Replace CAS Foundation Code with Commercial DMS		06/97	
Integrate Standard DMS into PTCS		FY98	
Integrate Standard DMS into PTAS/RAM/ Procurement Desktop		FY99	

5.1.4 Data Management

Data management is a PTO-wide activity that ensures:

- Data is treated as a valuable resource.
- Data is defined separately from the technology used to collect and store it.
- Accurate information about data (metadata) is kept.
- Common data management guidelines, methods, and tools are used by all AISs.

In the past at the PTO, each application development group defined data and/or relied on a contractor to define the data without regard to an enterprise view. This is changing. In late 1993, the PTO issued draft policies for data management and data element standardization. The final data management policy and TSG were approved by the Commissioner in October, 1995. A large scale effort is underway to model and standardize PTO data.

a. Description. PTO-wide data management activities ensure that data is collected and disseminated to meet programmatic requirements fully. These requirements include accuracy and timeliness; improved management decision making by providing better access to more accurate and timely data; increased productivity in the information collection and processing activities as the understanding and use of available data increases; existing data shared to the maximum practicable extent, avoiding the cost of redundant data collection and storage; and reduced cost of system maintenance and time needed to modify implemented systems by designing more stable and flexible databases.

In FY1994, data management staff began modeling patent and trademark business areas and systems. In FY1995, this effort was extended. Activities include: identification and control of redundant data elements; standardization of data elements; development of data models; and entry of data model information into the PTO data tools (Composer by IEF and the metadata repository). Data Management staff are classifying and standardizing legacy data elements as part of this effort. Various types of data models (e.g., logical, physical) now exist for the following business areas: Patent Image Data, Revenue Accounting Management, Trademark Application Management System, Trademark X-Search System, Madrid Protocol, and PreGrant Publication. The 659 provisional standard data elements identified in early FY1995 will be standardized or rejected and additional data elements will be considered for standardization in support of the PTO's model-based standardization effort. The Electronic Filing Data Interchange Standard for Patent Application data will be modeled in FY1995 and FY1996. An integrated, larger-view data model will be prepared combining these earlier efforts. Most importantly, enterprise modeling began in June 1995.

Activities occurring in the FY1996 to FY2001 period include completion of the enterprise model, and developing data models of additional business areas to support automated information system development as well as data models of existing systems to facilitate reengineering. Data models will be normalized as needed. In data management, normalize means to apply techniques to a database to minimize the inclusion of duplicate information. Normalization greatly simplifies query and update management. Model-based data standardization will continue to reduce redundancy, facilitate single-point-of-

entry of data, and provide for the reuse of data. Other potential projects slated for this time period include supporting the transition to Standardized General Mark-up Language, and continued integration of logical data models, combining all the PTO data. During this time period, metadata (information about data) management will be perfected through optimum use of tools and procedures.

b. Justification. PTO-wide data management procedures, standards, and a development life cycle are needed to reduce data redundancy, facilitate single-point-of-entry, and promote reuse of data. A viable data management program helps achieve the goal of delivering quality software products when promised and within cost estimates. Data modeling and standardization support reengineering of the PTO business processes. Data modeling identifies the information needs of an activity. It is an outstanding communication tool providing an accurate understanding of how the PTO does its business based on the PTO's needs. Data modeling of existing systems provides a snapshot of current operations and allows future system development efforts to move in a consistent business direction. Standardizing and using standard data is an enabler for making processes repeatable (reusable and sharable) across the PTO. System development and maintenance is supported with a common starter set of data elements, culled from the central repository of metadata. Standardization supports data sharing and enhanced data quality. Data sharing reduces storage costs. It facilitates faster and more efficient system development. Enhanced data quality occurs when the meaning of data is totally unambiguous. The data user is given a higher level of confidence.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Begin Enterprise-wide data modeling	01/95		04/95
Begin PTO-wide standardization of data	03/95		07/95
Evaluate Initial Capabilities of Information Repository	01/96		
Approve First Set of Standard Data Elements	06/96		
Complete enterprise-wide data model	09/96		
Adopt Standard Test Tools and Data Repository	12/97		
Integrate Logical Data Models	09/97		
Initiate Data Quality Improvement Program	09/97		
Begin Required Use of Information Repository	09/97		
Implement Long Term Capabilities of Information Repository			

Begin Model Based Maintenance Using Data Repository and Model Encyclopedia	09/98
Augment and Refine Standard Data Elements	09/00

5.1.5 Data Capture

Data capture is the conversion of source documents into text or digital image form. Paper documents are scanned and represented as digital images or tapes containing image data converted into electronic text. The electronic representations of the documents are loaded and made available for searching (text documents) and displaying (image documents). The function of data capture is performed by computer operations in a production environment. It typically includes quality control checks on the captured electronic data.

a. Description. To maintain the current text and image databases, the PTO accomplishes activities such as completing the loading of U.S. patent images dated from 1790 to 1970 to Rapid Access Devices, obtaining foreign data files under Trilateral agreements (often paying for courier services and royalty fees), converting data from tapes to cartridges, converting data stored on floppy disk to magnetic tape and magnetic disk, converting information on paper into electronic form, validating the data, refreshing/copying current tapes in accordance with archival tape storage procedures, and managing and administering the various data-related processes.

b. Justification. Withholding funding from this activity may lead to an increase in the number of cases brought before the Board of Patent Appeals as examiners use out-of-date or erroneous information. With the increasing number of applications expected from FY1995 to FY2000, pendency times will be increased as examiners are required to use the paper files to ensure a quality examination is performed on each application.

c. Status: Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
All U.S. patent images available to customers	04/94		05/94
Loading of First Page full image search file complete	08/98	09/98	

5.1.6 System Acceptance Testing/Independent Verification and Validation Efforts

5.1.6.1 APS System Acceptance Testing/Independent Verification and Validation

This activity is now converting to the PTO's new Life Cycle Management Methodology and comprises all functions required to test, integrate, and install software enhancements, corrections, and modifications into the APS production environment. Each element of this activity is accomplished within the framework of a baseline concept. A baseline consists of a variable number of software capabilities to be acceptance tested, integrated, and installed within a specific timeframe.

a. Description. Each APS baseline installation includes a full suite of Testing and Integration documentation. Periodic formal reviews occur within every baseline iteration as follows:

- Preliminary Design Review (PDR)
- Detailed Design Review (DDR)
- Test Readiness Review 1 (TRR1)
- Test Readiness 2 (TRR2)

The installation of enhancements into the APS production environment follows completion of acceptance testing and its associated reviews. These reviews include:

- Integration Testing (IT)
- Formal Qualification Testing (FQT)
- Beta Readiness Review (BRR)
- Beta
- Production Readiness Review (PRR)
- Production Trial (PTR)

In addition to these testing activities, Independent Verification & Validation (IV&V) contractor personnel evaluate and review the primary contractor's test documentation for accuracy, completeness, consistency, and adherence to compliance standards. IV&V contractor personnel also review test specifications and procedures in conjunction with the PTO managers and the primary contractor to ensure consensus prior to test execution.

IV&V contractor personnel likewise monitor and evaluate the performance of the primary contractor's regression testing and analyzes SAT documentation to verify the traceability of requirements to the system. IV&V contractor personnel are further required to participate as SAT observers whenever necessary.

IV&V contractor personnel also provide quality control for software system configuration through periodic audits against the baseline. The audit process is used for both application and system software. Application software is re-audited with each new baseline release, while system software is audited on a less frequent, "as required" basis.

b. Justification. If this work is not funded, there is a high risk of functional and technical errors affecting critical, important, and minor portions of the APS, occurring during the operation of the APS. Each error occurrence potentially limits examination quality and productivity throughout the entire Patent Corps until the error is corrected, and often results in extremely expensive changes to the system. Early detection and correction of errors using baseline testing and IV&V activities reduces this risk at a point in the project activities when low costs are required to change the system. Additionally, OMB Circular A-130, Appendix C, mandates many of these activities as part of the sensitive system certification process. If this work is not funded, the PTO would need to allocate personnel to perform these activities. Also, customer focus group concerns about system implementation problems uncovered the fact that these systems did not undergo rigorous systems acceptance testing and IV&V procedures.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Baseline 2.3	01/94		04/94
Baseline 2.4	09/94		12/94
Baseline 3.0	02/95		05/95
Baseline 3.1	03/95		05/95

Baseline 2.3 testing enabled the following capabilities to be implemented: connectivity of non-UNIX devices to Messenger, enhancements to Messenger, operating system upgrades, PTCS release 1.0.2, improved handling of Named Document Collections by workstations, UNIX and PTOnet system upgrades, enhancements for the HDDs, resolution of discrepancy reports, user workstation logoff, and UNIX clock synchronization.

Baseline 2.4 testing enabled the following capabilities to be implemented: HDD diagnostics, bulk cache, optical device diagnostic utilities, operating system upgrades, UNIX and PTOnet system upgrades, and resolution of discrepancy reports.

Baseline 3.0 will test the shared use workstation release 1.0 and GIS Version 1.0 prior to implementation of these two applications.

Baseline 3.1 will test the following: enhancements to Messenger, operating system upgrades, PTCS release 2.0, UNIX and PTOnet system upgrades, resolution of discrepancy reports, and APS cache prior to implementation of these capabilities.

It is assumed that future baseline releases will occur twice a year from FY1995 to FY2000.

5.1.6.2 Non-APS System Acceptance Testing/Independent Verification and Validation

New Non-APS Systems are all to be developed with the new Life Cycle Management Methodology (LCM).

a. Description. The Life Cycle Management Methodology is defined in "Life Cycle Management For AIS". The review events of that methodology are detailed in the Quality Assurance (QA) TSG.

b. Justification. If this work is not funded, non-APS systems will not be developed with a uniform standard methodology. Unpredictable, uncontrolled developments will occur with costly duplication and incompatibility as the consequences. Additionally, OMB Circular A-130, Appendix C, mandates many of these activities as part of the sensitive system certification process for the Patent Application Location and Monitoring (PALM), Trademark Reporting and Monitoring (TRAM), and Revenue Accounting and Management (RAM) systems. One recommendation resulting from the customer focus group is that the PTO adopt the APS system acceptance testing procedures for all PTO AISs.

c. Status. New Non-APS Systems are being developed with the new Life Cycle Management Methodology (LCM). Examples include: PGPub, EASY, and RAM. The PTO intends to migrate existing systems to that methodology as soon as practicable.

5.1.7 Quality Assurance (QA)

The PTO's Quality Assurance (QA) (including technical standards and guidelines (TSGs) and the PTO Life Cycle Management) program improves the ability to detect errors as early as possible in the system development process.

a. Description. QA activities include: development of products which improve the PTO's software development processes, policies, standards, procedures, guidelines and life cycle methodologies; improvement of the Requirements Management process; and development of the necessary plans to guide and support the transition of APS from the current contractor to a new System Development and Maintenance Contractor. The QA staff also reviews and inspects documentation produced by supporting contractors and PTO development staff, and provide technical assistance to the PTO development staff as needed.

b. Justification. If this work is not funded, there is a high risk of functional and technical errors affecting critical, important, and minor portions of the APS and non-APS systems occurring during their operation. Each APS error occurrence potentially limits examination quality and productivity throughout the entire Patent Corps until the error is corrected, and often results in extremely expensive changes to the system. Errors in non-APS systems could cause inaccurate accounting for funds and expensive system changes. Early detection and correction of errors using QA activities reduces this risk at a point in the project activities when low costs are required to change the system.

c. Status. Quality Assurance is a continuous level of effort service provided to all AIS projects. Individual QA products are part of the life cycle of each AIS project. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Testing TSG	08/95	02/96	
System Boundary Document TSG	03/95		04/95
Interface Document TSG	03/95	06/96	
Project Management Plan TSG	03/95	12/95	
User Interface Specification TSG	03/95	06/96	

Target System Technical Architecture TSG	03/95	06/96	
Quality Assurance TSG	03/95	12/95	
Data Management TSG	03/95		10/95
Configuration Management Plan TSG	03/95	03/96	
Functional and Data Requirements TSG	03/95	02/96	
Detailed Business Area Description TSG	03/95	02/96	
Data Element Standardization TSG	07/95	03/96	
Business System and Technical Design TSG	06/95	06/96	
AIS Development Plan and Process Tailoring TSG	09/95	01/96	
Operations TSGs	03/96	06/96	

5.1.8 Configuration Management (CM)

The Configuration Management (CM) program improves the PTO's ability to manage and control the various components of computer hardware, software, and documentation.

a. Description. CM activities manage the identity and content of the hardware, software, and documentation of AISs. CM operates and continuously improves the PTO's AISs. The CM staff reviews and inspects the products developed by supporting contractors and the PTO development staff, and provides technical assistance as needed.

b. Justification. CM reduces the probability of errors and rework occurring by enforcing a consistent, testable structure to the AISs through the use of automated CM tools. CM provides a mechanism to track changes/enhancements to the system. With this mechanism, insight is provided to the customer about the status of the system at any point in time. CM provides the test organization with the assurance that the system being tested at any point in time is a baseline that can be recreated using CM products. If a standardized and centralized CM function is not funded, software development costs can greatly increase due to the lack of coordination and consistency within the project and among all AIS projects. The time and cost needed to identify sources of functional or technical errors is greatly increased. Without controlling mechanisms such as CM, examination quality and productivity throughout the entire Patent Corps may become limited as changes to the APS produce errors in numerous places that require individual corrections a number of times until the errors are fixed.

c. Status. Configuration Management is a continuous level of effort service provided to all AIS projects. Individual CM productsare part of the life cycle of each AIS project.

5.1.9 Integrated CASE Tools

To develop any automated information system, one first chooses a methodology that defines a disciplined approach for the development and maintenance of systems. The PTO chose James Martin's information engineering methodology to provide:

- A focus on strategic planning and business goals to build systems that better meet the PTO's "corporate" needs.
- Better integration of information systems by using shared data that is centrally controlled.
- A stable representation of data that will not dramatically change as business procedures change.

CASE tools are software applications that automate (at least in part) a particular task, such as the development of documentation or writing a program code. CASE tools are used to support the implementation of the information engineering methodology. In the past, each PTO project has chosen differing methodologies, procedures, and tools to be used to develop systems. It was difficult for management to gain consistent insight into the progress of different projects. Also, transferring personnel between projects as projects are completed or priorities change, is inefficient due to the need for retraining on tools and procedures. Standardizing on one suite of tools will reduce the overall maintenance, operations, and training costs for the tools.

a. Description. The PTO will acquire and integrate a software engineering environment to be used on all AIS projects. In FY1995, developers and managers on selected projects began using standard CASE tools. The PTO's selected tools are:

- Texas Instrument's Composer 6 Information Engineering Facility (IEF). Enforcing the information engineering methodology, IEF provides an integrated set of tools supporting planning, analysis, design, and construction of automated information systems.
- SQL Software's Product Control Management System (PCMS). Necessary for the successful transition of PRC products and knowledge to the PTO, PCMS will control the configuration of the APS hardware and software components.

- GEC Marconi's Requirements Traceability Management (RTM). Necessary for the successful transition of PRC products and knowledge to the PTO, RTM will capture the requirements being satisfied by APS.

Continuing acquisitions of user licenses for each of these tools will lead, by the end of FY1998, to all developers and managers having access through PTOnet to an integrated set of CASE tools. These tools will provide automated support for the Information Engineering (IE) system development methodology, and for the quality assurance, configuration management and requirements management functions which provide management control over the use of IE methodology. The tools will also support the re-use of data elements, plans and cost/schedule estimates between projects. The tools are not a panacea and do not remove the need for careful planning and judgment. Other tools will be evaluated for inclusion in the standard tool set.

b. Justification. The benefits of providing a suite of tools for use by all the PTO systems development projects include:

- Provides for standardized processes and forces developers to follow well-defined procedures.
- Automates many labor-intensive development tasks.
- Simplifies software maintenance.
- Improves software quality through automated checking.
- Enables reusable design and data.

These benefits result in reduced costs incurred in developing and maintaining systems, improved capability for disparate systems to interface with each other and exchange information with little modification to the systems and more efficient and effective use of a shrinking FTE base. Other benefits include:

- Risks and costs for the APS transition may be much higher without automated tool support.
- Reduces substantial risk that the automated information systems will not be delivered on schedule.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates: Initial Projection	Completion Dates: Current Projection	Actual
CM tool implemented throughout CIO	09/96	09/97	
Requirements Management tool implemented	09/97	09/98	

5.1.10 Information System Security

Security plans, procedures, and controls ensure that the PTO's automated business processes remain available and capable of supporting mission critical functions while protecting private, financial, and proprietary data from unauthorized destruction, disclosure and modification. The requirements of law, the public trust, and management needs and responsibilities for human and physical resources must be documented, analyzed, and reported. The PTO managers judge the adequacy and relevancy of these analyses, issue decisions, and support efforts to secure the availability, integrity, and confidentiality of information technology resources.

In September 1990, the PTO's Information Technology Security Officer, under the direction of the IRM Senior Official, developed a Security Plan to answer the Department of Commerce's declaration of a Material Weakness in the PTO's security posture. Though the Departmental IRM office accepted the plan, technology advances and budget constraints led PTO management to defer implementation.

a. Description. The Information Technology Security Program includes contract support, automated tools, training, operations and maintenance, AIS and facility accreditation, and specific activities designed to bring information to senior management officials who will be expected to render decisions and support basic security activities. The Information Technology security program is a multi-year effort that continuously builds on achievements of previous years. Specific activities to be completed in FY1996 to FY2001 include: the development and implementation of recurring security training classes to be given PTO-wide; creation of Information Technology security policies and procedures; creation of a PTO Security Manager's Handbook; review of Security Plans developed by the Program Managers for each AIS; creation and implementation of a personnel position sensitivity analysis process; and the procurement and use of automated tools to assist risk, threat, and vulnerability analyses. AIS accreditation audits will also be performed.

b. Justification. Much of the PTO's data requires protection under the Privacy Act, the Financial Manager's Integrity Act, Patent Law, Executive Orders, OMB regulations, and other statutes. In accordance with these regulations and others, such as the Computer Security Act of 1987, the PTO must install cost effective controls to protect the AISs and the data used and/or generated by these systems. Security activities help to ensure that the PTO's important automated business processes will be able to support mission critical activities, continue support when the automated system fails, and protect private and proprietary data from inappropriate disclosure. Not funding the Information Technology Security Program could leave critical business processes at risk of catastrophic failure and permit increasing risk of loss of destruction of information technology assets. Failure to fund the program would also place confidential data at risk of unauthorized disclosure or modification. Either would cause embarrassment to the PTO and require litigation to counter suits by those suffering damages through inappropriate disclosures.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Initiate the Accreditation Processes for PTO automated systems	09/95		09/95
IT Technical Security Guideline approved by CIO	09/95	09/96	
Develop PTO-wide Security Training	09/95	09/96	
Develop PTO Security Manager's Handbook	09/95	09/96	
Accreditation for PTO's Unisys A-16 host computer	09/95	09/96	
Accreditation for PTO's Amdahl 5990 host computer	09/97		
Accreditation for PTO's Unix-based host computers	09/97		
Accreditation for PTO's data communications network (PTOnet)	09/96	09/97	
Accreditation for PTO's Application Systems	09/00	09/00	

AIS Security Accreditation's were undertaken during FY1995 for the ABTSS, CCInet, FFS and PALM applications systems and for the Unisys A-16 host computer system.

5.1.11 Automated Program Management System

The PTO AIS project managers use an automated program management system to help plan projects, satisfy information and reporting needs, and track progress against plans.

a. Description. The Automated Program Management System includes a proprietary software application called CAT (Control and Analysis Tool), a minicomputer with interactive terminals, on-line printers, and a graphics plotter. Individual managers can develop and/or modify network project plans using their desktop computers and Microsoft Project software, updating the CAT system as necessary. The PTO management uses system reports to assess project progress. The system can simulate "what if" situations for management to determine the effect of adding resources or changing the schedule. Additionally, the system tracks the following information: planned and actual schedules, descriptions of all activities, deliverable schedule and acceptance, actual hours for internal project staff, and operating plan budgets for all program elements.

Enhancements added in FY1995 include the ability to track in-house expenditures for all program elements, and budgeted and actual labor hours and dollars for all contractors.

b. Justification. Since AISs comprise many separate projects and task orders, many of which are interrelated with other projects in other AISs, an automated system is needed to track, control, and report on all projects, either individually or as an interconnected whole. Without this automated tool, and the underlying project management guidelines described within the PTO Project Management Manual, each AIS would need to develop its own system and integrate these systems with other projects.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Ability to track in-house expenditures for all program elements	03/95		03/95
Ability to track in-house labor hours for all program elements	03/95		03/95
Ability to track budgeted and actual labor hours and dollars for all contractors	12/94		12/94

Ability to load financial information from FFS into CAT	09/95		03/95
Executive Information Application Developed in CAT	11/95		11/95
Ability for project managers to access CAT via PTOnet	09/96	02/96	

5.1.12 Technical Policy

a. Description. The Technical Plans, Policy and Oversight Staff develops and/or coordinates, the development of the PTO Information Technology policies, standards, and guidelines, and develops the PTO's annual Strategic Information Technology Plan, supporting documentation and updates to the plan. A draft of the proposed policy or plan is coordinated for comments, the comments are reviewed and resolved, the proposed policy or plan is then reviewed by the Business Council, and then approved by the Commissioner. The topics of policies and guidelines include: information technology planning, life cycle management, data administration, electronic mail, information technology standards, office automation and program management oversight. The Commissioner signed the Data Administration Policy in October 1995.

b. Justification. Currently, the PTO is developing clear and definitive Information Technology policies. Without written policies, the PTO staff do not know what their responsibilities are (technical, program, and senior management), and they cannot be held accountable. Policies and procedures will be established as shown below. Actual dates reflect a policy signed by the Commissioner.

c. Status. Drafts have been prepared that address the following topics: E-mail, life cycle management, and software use. Activity and product milestones are:

	Completion Dates		
	Initial	Current	
Tasks/Products	Projection	Projection	Actual
Policy on Program Management Oversight	03/95		Disapproved
Policy on Strategic IT Planning	03/95	03/96	
Policy on Data Administration	03/95		09/95
Policy on E-Mail	03/95	01/96	
Policy on Acquisition	03/95	03/96	
Policy on Security	03/95	06/96	
Policy on Life Cycle Management	02/96		
Policy On Software Use	03/96		

5.1.13 System Architecture

The System Architecture staff has responsibility across all development organizations to define a PTO-wide information technology architecture to support individual application development efforts, and to provide full life cycle engineering support.

a. Description. System Architecture is the set of activities which define the architecture and engineering to meet the requirements of Patent Application Management system, Classified Search and Image Retrieval, Classification Data Systems, Text Search, Global Patents, Non-Patent Literature, and Appeals Case Tracking System automation efforts. Specific Architecture activities include the development of a PTO-wide Target Architecture, PTO Technical Reference Model, baseline system sizing assumptions and engineering data, and the PTO information technology system standards and guidelines. Engineering activities include focused research efforts to address and resolve immediate engineering issues, and to investigate alternative technologies to support reengineered processes.

b. Justification. System Architecture activities are necessary to identify and solve technology issues once, rather than have each new development project duplicate efforts to solve the issues. Systems architecture minimizes risks which may be present where there is innovative technology, recommends major re-partitioning of functionality, corrects undefined interfaces, etc. A standards-based architecture enables systems to be modular, vendor independent, loosely coupled with interchangeable parts, and can be used to lower life-cycle costs. The PTO has developed a Technical Reference Model based on the Application Portability Profile (APP) developed by the National Institute of Standards and Technology (NIST). The PTO Technical Reference Model outlines a suite of selected specifications (or standards) and products, that define the interfaces, services, protocols, and data formats for implementation of Open System Standards-based information technology infrastructure. The PTO Technical Reference defines the target technical environment for the acquisition, development and support of the PTO information systems. The ultimate goal is to provide a means of cost-effectively supporting agency-level requirements while at the same time providing a platform for user-driven innovation in the business applications of technology across the organization.

c. Status. The PTO-wide Target Architecture is an on-going and evolving task. Initial work has begun on an agency-wide PTO Technical Reference Model and PTO system standards and guidelines as part of the high-level system architecture effort being developed for all PTO information systems. On-going system-wide engineering activities include analyzing and resolving technical issues for all hardware and software contractors, such as the Chemical Abstracts Service (CAS), technical support for the

PTO's information technology laboratory (ITL), and the document management testbed (DMTB. Additionally, the PTO is developing a program to explicitly manage the infrastructure apart from applications and data. This program is intended to provide a means for proactively managing the information technology resources of the PTO beginning with the selection of standards, identification of candidate commercial products, selection of commercial products or development of custom products that implement approved standards, and the retirement of outdated infrastructure elements. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
APS Target Architecture (initial)	08/95		09/95
Draft PTO Technical Reference Model	04/95		07/95
Publish Technical Reference Model Version 1.0	10/95		10/95
Develop PTO-wide Target Architecture (Including SGML, Electronic Filing)	09/96		
Develop PTO-wide System Backup Architecture	09/96		
Develop Transition Plan to Achieve an Open System Environment	09/96		
Publish Technical Reference Model Version 1.1	09/97		
Develop New PAM/PALM Architecture	09/97		
Publish Technical Reference Model Version 1.2	09/98		
Implement Phase I of the Open System Transition Plan	09/98		
Publish Technical Reference Model Version 1.3	09/99		
Publish Technical Reference Model Version 1.4	09/00		
Implement Phase II of the Open System Transition Plan	09/00		
Publish Technical Reference Model Version 2.0	09/01		
Implement Final Phase of the Open System Transition Plan	09/01		

5.1.14 Business Process Reengineering

Business Process Reengineering (BPR) has gained widespread acceptance throughout the private sector as a management technique expected to significantly improve the efficiency and effectiveness of an organization's processes. Such improvements are commonly accompanied by dramatic reductions in operating costs, realignment and restructuring of the organization and its work processes, and notable improvements to the quality of the

organization's products. The use of BPR in the federal government is expanding rapidly as agencies recognize the value and potential effectiveness of reengineering practice.

The PTO established its BPR program in April 1993, and over the course of the last two years, this program has matured into a successful operation. The first year was spent establishing the program, training the PTO personnel in a variety of BPR tools and techniques, and documenting current processes and practices. In 1994, the newly established Office of Business Process Reengineering began the development of a new vision for PTO operations, concentrating the majority of its efforts on small, well-defined sub-operations of the enterprise. In 1995, the OBPR expanded its efforts to include reengineering the two largest areas of PTO: Trademarks, with a "To-Be" model completed in December 1994; and Patents, where a preliminary "To-Be" model was delivered on September 29, 1995. During FY1996, it is expected that the "To-Be" model for Patents will be finalized, and the focus of OBPR will shift toward transition planning and implementation.

As its mission states, OBPR's purpose is to optimize the PTO's business practices, promote an innovative climate and integrate managed change.

a. Description. The Office of Business Process Reengineering presently has four long term reengineering efforts underway:

1. The Patent Project.

The preliminary "To-Be" model for a new Patent business process was delivered on schedule on September 29, 1995. The "To-Be" concept received approval from the Business Council on November 14, 1995. During FY1996, work on this project will proceed on three parallel tracks: the first track will focus on developing a detailed Transition Plan; the second track will plan and implement a series of Immediate Initiatives; and the third track will focus on resolving the many policy issues raised by the "To-Be" concept.

2. The Trademark Project.

A comprehensive review of trademark processing and examination activities has resulted in the development of a proposal for a dramatically restructured trademark process. A detailed business case has already been produced. During FY1996, the OBPR will lead an effort, with full participation from subject matter experts, to develop and begin execution of a Transition Plan. In parallel, a series of Immediate Initiatives will also be pursued. In addition, the OBPR has conducted an analysis of processing activities performed in the Trademark Trial and Appeal Board (TTAB). Recommendations which

are expected to enhance case controls, improve work flow, and enable better service to the public have been adopted and are being implemented. Preliminary work with the TTAB has resulted in a control group producing a hundred fold reduction in lost cases and a four fold increase in the percentage of cases processed in a timely manner.

3. Efforts Common to the Department of Commerce.

As the center of excellence for Business Process Reengineering within the DoC, OBPR is currently working on two of the seven strategic planning priorities determined by the DoC Chief Financial Officer. These are the Acquisition Process and the Budget Process. A third, smaller scale project has been proposed for reengineering the small purchasing process.

The OBPR is providing project management in support of the reengineering of the DoC Acquisition (i.e., purchases over $100,000 that are other than simplified procurements) process and works in close coordination with the Process Owner, the Director of Acquisition Management at DoC. Information technology enablers of the reengineered process may include expert systems, new relational databases, internal web technology (enabling file and data sharing across Commerce), electronic shopping and ordering through the Internet, and connections to the Core Financial System (CFS) within the Commerce Administration Management System (CAMS) and the inventory control system. The reengineering effort is integrated with the work of the Procurement Cycle team and (CAMS) steering committee. Additionally, this project is implementing procurement changes mandated by legislation and policies such as the Federal Acquisition Streamlining Act and requires specific regulatory waivers requested of the Office of Federal Procurement Policy (OFPP).

The OBPR has also produced a current business analysis of the DoC budget process and is in the process of beginning the target design analysis. This project is currently on hold due to issues at the Department level.

4. PTO Infrastructure.

The OBPR is reengineering the PTO's entire budgeting process encompassing the planning, budgeting, and cost management phases. A current business model has been created for the planning and budgeting phases of the process in addition to preliminary drafts of the target model for these phases. Furthermore, a draft "concept of operations" has been created for the cost management phase. The planning/budget has also gone through a transition planning session during which the necessary parts for a transition plan were produced.

The OBPR is also reengineering the PTO's Human Resources functional area. The processes to be reviewed include organizing and managing work; administering employees' career life cycles; administering compensation, benefits, and awards; assisting management with employee/union issues; and administering recruitment plans. During FY1996, OBPR will develop "As-Is" and "To-Be" models, and will begin discussions on Transition Planning and Immediate Initiatives. The Office of Human resources will better align itself to support the PTO's business mission and meet customer needs. The OBPR performs project management functions for the Business Communications Project. This is a modified business process reengineering effort. This project encompasses the people, policies and systems necessary to provide a highly effective internal business communication process. A pilot of an electronic bulletin board is underway and will be expanded in early 1996 to all PTO users. Following the Life-Cycle Methodology (LCM), this project is scheduled for implementation by 1997.

In addition to the formal BPR projects outlined above, OBPR will continue to assist customers on specific BPR projects, other management analysis tasks, and will provide team membership on other PTO initiatives (e.g., Competency Pilots, Executive Document Management, Business Communications, ISO improvement teams, PGPubs, Economic Analyses, and LCM documentation).

b. Justification. The Office of Business Process Reengineering has become an Agent for Change, and is an important repository for institutional knowledge about the Patent and Trademark Office. With this knowledge, it is in a unique position to assist program personnel in developing cost effective alternatives to present processes, or to develop proposals for meeting new requirements in a cost effective fashion. In these times of shrinking resources and rigorous scrutiny, business process reengineering is becoming a vital activity throughout the federal government. Many departments and agencies are beginning to realize its importance to their future survival and success. For example, the Department of Defense (DoD) currently dictates that no new IT effort be undertaken until the business processes it proposes to automate are themselves reengineered. Such increased demand for reengineering services creates a unique opportunity. As the OBPR continues to develop expertise in business process reengineering, it can use this expertise to aid other federal departments and agencies. This may well lead to the ability of the OBPR to market these services competitively, and to thereby become a fee-based profit center. While the final impact of implementing any of the reengineered processes has yet to be measured, it appears certain that the benefits reaped from such implementation will far exceed the cost of the BPR program.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates: Initial Projection	Current Projection	Actual
Patents			
Current Business Process Analysis Report			10/94
Target Business Process Analysis Report			10/95
Detailed Concept of Operations			11/95
Target Business Process Transition Plan	06/96		
Trademarks			
Current Business Process Analysis Report			05/94
Target Business Process Analysis Report			09/94
Target Business Process Economic Analysis Report			12/94
Detailed Concept of Operations	06/96		
Target Business Process Transition Plan	09/96		
Department of Commerce Efforts			
Acquisition Effort			
- Current Business Process Analysis Report			08/95
- Target Business Process Analysis Report			12/95
- Detailed Concept of Operations	06/96		
- Target Business Process Transition Plan	09/96		
DoC Budget Effort			
- Current Business Process Analysis Report			02/95
PTO Infrastructure			
PTO Budget Effort			
- Current Business Process Analysis Report			12/94
- Target Business Process Analysis Report	01/96		
- Detailed Concept of Operations	01/96		
- Target Business Process Transition Plan	06/96		
Human Resources Project			
- Current Business Process Analysis Report	05/96		
- Target Business Process Analysis Report	09/96		
- Target Business Process Transition Plan	06/97		

5.1.15 Records Management

Records management is a PTO-wide activity that ensures compliance with federal laws and regulations. Under this activity, effective controls are created over the maintenance and use of records used to conduct current business. Standards, procedures, and techniques are introduced and institutionalized to improve the management of records, to promote the maintenance and security of records that must be preserved, and to facilitate records disposition and access.

a. Description. In FY1995, records management personnel provided level-of-effort service PTO-wide on the organization and disposition of records. They introduced a formal training program. They began examining several areas that need special attention, including vital records and electronic records. They identified records management requirements that must be addressed in developing automated information systems. Most importantly, they conducted a PTO-wide records inventory in order to schedule all PTO records for disposition.

Activities occurring in the FY1996 to FY2001 period include focusing attention on the vital records program and the management of electronic records. A disaster recovery plan for records will be prepared. Another potential activity is the development and implementation of a PTO-wide records filing scheme. Implementation of the Paperwork Reduction Act of 1995 requires attention during this time frame. Providing level-of-effort records management service is an ongoing requirement.

b. Justification. An active, effective PTO-wide records management program is required by law and dictated by common business sense. Such a program supports on-going operations and facilitates the reengineering of PTO business processes. A well-executed vital records program supports disaster recovery. Attention to electronic records management is crucial to successful information technology planning and must go hand-in-hand with development of automated information systems. A standardized filing scheme across the agency will contribute to efficient operations.

c. Status. Activity and product milestones are:

	Completion Dates		
	Initial	Current	
Tasks/Products	Projection	Projection	Actual
Complete PTO-Wide Inventory	02/96		
Register all PTO Records Schedules	02/96		

Issue Updated PTO Records Schedule	09/96
Issue Vital Records Directive	09/97
Schedule Vital Records	09/97
Prepare Disaster Recovery Plan for Records	09/97
Review and Schedule new PTO Records	09/97
Identify and Schedule All Vital Records	09/97
Begin Disaster Recovery Planning	09/97
Initiate Disaster Recovery Contractor Support	09/98

5.1.16 Disaster Recovery and Contingency Planning

a. Description. The PTO will continue to become more dependent on automated processes inherent value to the national economy, to require developing plans that alleviate or decrease the impact of a disruptive event. In recent years, earthquakes, tornadoes, hurricanes, fires, floods, and even bombs have interrupted data processing centers throughout the country. Other disruptions include water damage from heating and air conditioning pipes, building renovation damage, toxic fumes from train derailments, and aircraft accidents. This project will prepare the PTO to handle these and similar disruptive events in such a way that its business functions continue. Although this project will provide plans for automation disaster recovery and contingency planning for the business processes of the CIO, it does not provide contingency plans for the business processes of Patents, Trademarks, Personnel, etc. Each of these areas should generate their own contingency business plans.

b. Justification. The PTO is at risk of many disruptive events that could cause its business functions to cease. More to the point, the PTO does not have a viable set of disaster, recovery and contingency plans in-place that would alleviate or lessen the impact, caused by a disruptive event, to the business processes.

c. Status. The 1988 data center risk assessment must be revised. Numerous small-scale plans developed since 1988, were not coordinated, widely published, or tested. All require updating and coordination/correlation with the facts and processes of the late 1990s. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Risk Assessment (Revision)	06/96	09/96	
Draft Contingency and Disaster Recovery Plan	02/96	12/96	
Approved and Finalized Plans	05/96	07/96	

5.2 Infrastructure (PT-96-06-N)

The PTO is supported by an information technology (IT) infrastructure (foundation) of hardware, system software, and network communications that have been deployed in support of the mission of the PTO. The IT infrastructure provides access to application systems and office automation tools used in the performance of the work processes. The Commissioner has placed an extremely high priority on "keeping the trains running"; i.e., providing consistent, available, and reliable network and data processing services. Also inherent in this process is providing for the expansion of services and capabilities. During the FY1996 to FY2001 time frame, significant growth is expected to occur. Projects are in development for: expansion of APS image retrieval to the examiner's desktop, supporting work-at-home initiatives, remote support for image retrieval by the Patent and Trademark Depository Laboratories (PTDLs), adding data bases for expanded search capability, increased internal and external communication through use of electronic bulletin boards, access to the Internet, and multiple other application development projects as covered elsewhere in this Plan. All of these projects will require expansion and/or alteration of the infrastructure. The implementation, operations, and maintenance costs associated with the development projects are included in the individual project descriptions throughout this Plan. As they transition into operational status, the operations and maintenance costs associated with the infrastructure will migrate to this portion of the Plan.

Notable operational enhancement activities for FY1996 to FY2001 include: transitioning PTOnet (file servers and communications links) to a more robust and reliable operational environment; implementing additional capabilities for automated operations; consolidating contracts for mainframe, network and microcomputer support; providing end users with responsive and comprehensive help desk support; upgrading the mainframes and related software, as necessary, to support user requirements; enhancing the performance monitoring and capacity management and planning tools and capabilities to include end-to-end coverage; automate operations to enhance service levels and decrease dependence on FTE; and, disaster recovery and contingency planning efforts to alleviate the impact of disruptive events. The above activities will be accomplished through a combination of in-house personnel (PTO FTEs) and contractor support. Due to the FTE constraints and proposed reductions, increased reliance will be placed on contractors.

5.2.1 PTOnet

PTOnet is a comprehensive end-to-end data transmission facility linking the computers in the PTO, from the largest mainframes to the smallest intelligent terminals. The local area

network (LAN) currently connects 13 buildings in Crystal City providing networking service to approximately 5,000 customers of office automation products, data (electronic mail and document sharing), and Patent, Trademark, and other business applications stored on network file servers, mainframes, and minicomputers.

The network architecture makes use of fiber optics (using industry standard Fiber Distributed Data Interfaces) to provide a high speed link among multiple Ethernet sub-networks. The fiber optic foundation is interconnected by a number of communication devices (routers). The PTO plans to continue to enhance this configuration to provide increased service to customers and support growing requirements for access to images and emerging requirements for access to multimedia information. The basic network is modular and re-configurable, permitting each sub-network to be tailored to specific customer demand without affecting the entire PTO. The supported communication protocols (instructions that enable different devices to exchange information) are TCP/IP, IPX, and Ethertalk (a proprietary Apple protocol used to connect Macintosh microcomputers). Application gateways connect customers to remote locations for access to commercial databases, the Federal Financial System (FFS), the National Finance Center (NFC), Department of Commerce electronic mail, and internal PTO computers.

a. Description. The implementation of any additional applications or systems, such as Desktop Workstation Deployment, Patent and Trademark Assignment System, Office Automation applications and Global Patents, will require continuous enhancements to PTOnet to ensure satisfactory user support. The PTO experienced rapid growth in the use of networked computer workstations since 1991, and has become dependent on network services and office automation resources to support day-to-day operations. Office Automation resources refer to those activities that facilitate the use of file servers to deliver the full suite of office automation software products (electronic mail, word processors, spreadsheet, etc.) to the PTO's microcomputer customer community. Networked office automation activities, through the use of network file servers, are needed to ensure PTO customers have the tools and resources necessary to perform their missions and objectives. These known requirements necessitate that the existing network be expanded and integrated, both in configuration and technology, to adequately address the increasing image and text traffic, and eventually external access through public networks such as the Internet.

PTOnet will become a homogeneous, high-speed network providing data communications for the PTO's campus and access to remote locations through gateways. Specifically, the Network Integration Project will: 1) systematically interconnect all existing PTO sub-networks; 2) facilitate universal transfer and exchange of electronic mail, word processing, spreadsheets, text, and image data; 3) provide access to

commercial databases; 4) provide access to external networks where policy permits; and 5) ensure compliance with open systems standards and established security guidelines.

b. Justification. It is essential that PTOnet activities are accomplished and the system receives its security accreditation. Work needs to be accomplished to prevent network performance degradation and to ensure the effectiveness of the network to its customers. It should be noted that in addition to the Integrated Network Task (under the direction of the Office of System Architecture and Engineering), immediate expansion to the capacity of the existing PTOnet architecture is necessary to support current and near term future operational requirements.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Initial APS Deployment			09/93
Campus-wide PTOnet Connectivity			05/94
IBX Digital Switch Replaced			05/94
Integrated Network Implementation			
Detailed Design Complete	09/96		
Backbone on Campus Switching Network Installed	09/97		
All Crystal City Buildings Integrated on one Network	09/97		
Limited 100 Mbs to Desktop	09/97		
Beta Testing Complete on all Functional Systems	09/98		
All Buildings Upgraded to Full High Speed Switching Architecture	09/99		
Virtual Networking Capability	09/99		
Full 100 Mbs to Desktop	09/99		
Integrated Network			
OA Servers Purchase and Installation Complete	07/96		

PTOnet Server Evaluation and System Upgrade	
New Rapid Access Devices (RADs) Operational	09/97
Standardized Network Operating System and Server Replacement Completed	09/98
Electronic Commerce Pilot Gateway Installed	09/98
New High Density Devices (HDDs) Text Search Replacement Pilot Operational	09/98
Planned Server Technology Review and Upgrade	09/99
Electronic Commerce Gateway Fully Operational	09/99
Text Search Replacement System Fully Operational	09/00
Replacement of APS Text and Image Storage Devices Completed	09/00
Simple Network Management Protocol (SNMP)	
Expanded APS Administration and Control Capabilities Installed	09/96
Remote Management of Client Applications	09/97
SNMP Extensions Programmed to Replace SMS	09/99
Asynchronous Transfer Mode (ATM) Implementation	
ATM Backbone Installed on PTOnet	09/96
ARPA's Advanced Technology Demonstration Network Interface Connected	09/96
ATM to Desktop Pilot Completed	09/97
ATM Operationally Available to Selected Network Segments	09/98
Network Management System (NMS) Implementation	
NMS Upgrade of Openview and Additional COTS Support Software	09/96
NMS Expansion to Support Infrastructure Modifications	09/98
Control Administration and Control Operationally Available	09/99

Security	
Internet Access Implementation Completed	09/96
OA Secure Access from Home	09/96
Trademark Work at Home Pilot Completed	09/96
Advanced Security Applications Evaluation Completed	09/97
Secure Public Access Fully Implemented	09/98
Secure Enterprisewide Login and Audit Available	09/98
Certification and Accreditation at PTOnet	09/98
Trademark Work at Home Fully Operational	09/99

5.2.1.1 PTO-wide Bulletin Board Services

The PTO-wide Bulletin Board Services refers to those activities necessary for the acquisition of hardware and software and that provide support services, such as maintenance, integration, deployment, and administrative functions to support information exchange and reuse programs within the PTO. This area will provide information exchange services to over five thousand (5,000) customers.

a. Description. Microcomputers are used throughout the PTO in all aspects of the PTO's official functions. As a result of PTO-wide Customer Focus Group meetings, the Mathis-led Customer Satisfaction Survey, the PTO ISO team, and independent research done by the Office of Patents, a specific need for efficiently disseminating information within the PTO was identified.

To that end, the Bulletin Board Services (BBS) project is initially developing a Novell server-based bulletin board service from Commercial-Off-The-Shelf (COTS) components. The intent of the BBS project is to allow messages, procedures, and official notices such as personnel announcements and forms to be readily available and accessible from a single, reliable source. Since a BBS will be information intensive, the project includes the development and training of the procedures for cost center maintenance of the BBS. During the implementation of the BBS, additional services and delivery methods will be investigated to improve the internal information dissemination.

b. Justification. The PTO has experienced exponential growth in the use of networked computer workstations since 1991, and has become dependent on the network and office automation resources to support day-to-day operations. As the PTO increases the reliance on microcomputer technologies, more functions have been identified to improve efficiency through automation. Internal information dissemination is one of

those functions needed to ensure that PTO employees have the tools and resources necessary to perform their missions and objectives. By providing necessary resources, the Bulletin Board Services project can ensure system reliability, user friendliness, customer satisfaction, sufficient capacity, and a robust open system design. Implementation of the initiatives set forth by BBS promises to be most cost effective, while providing quality services resulting in increased productivity of our customers.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Interim System Completed (1,000 users)	09/95		09/95
Begin Final Equipment Acquisition	08/95		08/95
BBS Fully Operational	01/96	01/96	

5.2.1.2 Business Communications

The Office of Business Process Reengineering performs project Management functions for the Business Communications Project. This is a modified business process reengineering effort. This project encompasses the people, policies, and systems necessary to provide a highly effective internal business communication process. A pilot of an electronic bulletin board is underway and will be expanded in early 1996 to all PTO users. Following the Life Cycle Management Methodology (LCM), this project is scheduled for implementation by 1997. No funds have been approved for this project.

5.2.2 Office Automation

Microcomputers are used to support the Automated Patent System (APS) third generation workstation, the Trademark X-Search system, the full suite of office automation tools, intra-Departmental e-mail, Desktop Procurement, the PTO University, the PTO Training Facilities, and the Federal Finance System (FFS). Critically important is the integration of hardware and software, smooth deployment of complete automation solutions, timely and accurate assistance to customer inquiries and problems, and maintenance of systems and networks. As a result of PTO-wide Customer Focus Group meetings, expectations and measurements for success were identified. The PTO is committed to providing high quality products and services to its employees through expanded network connectivity, timely resolution of problems and better communication with users. Included are the deployment and support for a full range of office automation tools (software and services) to support the activities of the user community.

a. Description. The PTO has initiated a comprehensive support services capability to support its total office automation needs. Included in these services are remedial and preventive maintenance, centralization of microcomputer receiving, and the setup and installation functions. Testing and integration of all hardware and software including: Commercial-Off-The-Shelf (COTS) software, specially developed software, and customer sponsored software prior to deployment to the customers' desk will also be supported. Expert technical and customer service representatives will answer questions and troubleshoot problems. Qualified hardware repair technicians are also an integral part of this support initiative.

b. Justification. The PTO has experienced rapid growth in the use of networked computer workstations since 1991, and has become dependent on the network and office automation resources to support day-to-day operations. As the PTO increases the reliance on microcomputer technologies, more functions have been identified to improve efficiency through automation. Networked office automation activities are needed to ensure that users have the tools and resources necessary to perform their missions and objectives. By providing necessary resources, the PTO can ensure increased system reliability, improved user friendliness, customer satisfaction, property security safeguards, and a robust open-system design. The CIO has created a new capability for testing and evaluation. As new and advanced hardware and software become available on the market, this function will enable the PTO to test and evaluate them in relation to the existing information technology infrastructure.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Implementation of Microcomputer Security Program	06/95		06/95
HW/SW Standards for Microcomputer Systems	06/96	06/96	
Implementation of the Testing and Evaluation Program	03/96	03/96	
Full Implementation of Integration, Deployment and Maintenance and Support Services Program	06/97	06/97	
Full Implementation of Microcomputer Standardization Program	09/99	09/99	

5.2.3 Computer Operations

a. Description. The PTO maintains and operates mainframes (an AMDAHL 5990 and UNISYS A-16 in Crystal City and an IBM 9370 at the Boyers facility); provides Production Control services in the area of job scheduling, output distribution and tape dissemination to private sector customers; provides facilities services in the area of environmental management/monitoring and site preparation; provides data maintenance services that involve the verification and purification of the Patent and Trademark image and text databases, as well as the loading of the weekly image and text data to these databases; and manages the Boyers facility which provides the weekly input to the Patent and Trademark image databases, as well as high-volume tape dissemination efforts to the private sector. Additionally, the shared automation equipment (e.g., APS group printers) are serviced throughout the work day to ensure availability and continuous high quality services.

b. Justification. The Patent examiners and Trademark attorneys rely on the mainframe systems to perform their tasks. The entire PTO relies on the mainframe systems to manage and track patent and trademark applications as they move through the processes. Withholding funding from any of these areas may lead to increased pendency and an increase in cases brought before the Board of Patent Appeals and the Trademark Trial and Appeal Board as examiners and Trademark attorneys use increasingly out-of-date or erroneous information. A serious decrement in PTO revenue could result due to inadequate support provided to the Patent and Trademark Copy Sales service, the OEIP tape dissemination process, and to the Public Search areas in both Patents and Trademarks.

c. Status. On-going operational support.

5.2.3.1 Operating System Support & Related Services

a. Description. The PTO maintains and operates mainframes (an Amdahl 5990 and a UNISYS A-16) and other processors (Unix-based systems); provides capacity planning, operating systems programming, and database management support.

b. Justification. Withholding funding from this activity will lead to the inability to meet service level commitments and provide continued support. Since current capacity will be exhausted during calendar year 1997, activities are required to support the addition of current and upgraded processors and data storage devices.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates: Initial Projection	Current Projection	Actual
Upgrade Amdahl to support increased Messenger workload	05/95		05/95

5.2.3.2 Automated Operations

a. Description. The PTO operates an Amdahl 5990, a UNISYS A-16, UNIX-based processor, and Office Automation File servers. Many of the functions necessary to operate these systems are performed manually. By implementing automated processes that replace or augment manual processes, the PTO can increase the quality of services from existing systems, decrease or eliminate the impact of FTE cuts, and lessen the impact of growth. The PTO's plans for automating its computer operations include tools such as an automated tape library (ATL), automated console operations and intervention, system monitoring, user notification and automated file server backup using mainframe procedures. The major portion of the PTO's automated effort is focused in FY1996. The out-years will focus on maintaining and tuning the existing systems, and adjusting for POSIX compliant processors and peripheral environments.

b. Justification. Withholding funding from this activity may lead to decreased service levels. The present service levels are achieved by using human operators. FTE reductions must be compensated for by implementing automated operation tools. In addition, the PTO will not realize any expected increase in service quality that would be a result of implementing the automated operations tools. This is especially true of the automated tape library system which will directly reduce the need for FTEs and enhance the efficiency and stability of the operations environment.

c. Status. Some portions of OPS MVS and SYMON products have been implemented. In addition, modifications to existing job streams and procedures have been done. Both of these efforts have resulted in increased service levels due to quicker response to console messages, and increased reliability and standardization of operator functions. The automated tape library to be installed in FY1995 using FY1995 funds, will require maintenance throughout the period FY1996 through FY2001. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Oper Alarm	11/95		11/95
Hyper Help	11/95		11/95
SYMON	12/95		12/95
Proactive Net (Unisys)	03/96		
OPS MVS	11/96		
Control "R"	11/96		
Control "T"	09/96		
Mirror Sys and DB Packs (Unisys)	09/96		
UNIX Backup System	11/96		

5.2.4 Migration to 32-Bit Windows Operating System

The present 16-bit operating system that the vast majority of system devices use is not fully adequate for supporting the projects and workloads of the near future. PGPub, Image Retrieval, Global Patents and many other projects will require a 32-bit industry standard operating system, with a strong market share of office automation functions. Windows NT is an example of this new technology operating system. This upgrade will require significant planning and training, both of the technical developers and operations people, and of the user community who will be interacting with the new operating systems on the PCs and workstations.

a. Description. The CIO and the program areas will work together to plan a smooth transition to the industry standard 32-bit operating system, including the acquisition of experts on the issues of transition, on the establishment of protocols and accounts in a secure and user friendly manner, on the staged upgrades of user equipment to the standard working level of the operating systems, and on the training of both the CIO and program area personnel in the use, maintenance and control of the new software.

b. Justification. Though powerful, the new technology operating systems offer a range of features and security that is different in kind and quality from the current operating systems with which the office has experience. Insufficient planning may result in poor, or even disastrous, network situation, and jeopardize all of the projects that require workstations, printers or the network. Without sufficient training, operator error can result in the disablement of workstations and whole process lines. The purchase of experienced consultants is of significant importance to all of our future work.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Complete Analysis of Migration Path	09/96		
Complete Prototypes, User Tests	09/96		
Begin Migration to 32-bit OS	10/96		
Completion of conversion to 32-bit OS	06/98		

5.2.5 Standard Generalized Markup Language (SGML) Standards

The European Patent Office, Japanese Patent Office, and the U.S. Patent and Trademark Office (the Trilateral Offices) have agreed to revise and expand WIPO Standard 32, Recommendation for the Generic Logical Structure of Patent Documents, to define the standard use of Standard Generalized Markup Language (SGML) for electronic storage and exchange of patent documents.

a. Description. The PTO and EPO have been collaborating since 1992 on the revision of ST.32. In addition, the PTO is in the process of a transition of many of its information systems (including Electronic Filing of patents and trademarks, Pre-Grant Publication, PAM, MIMOSA), and publication markup and printing processes, to SGML-based systems. Hardware and software tools are required to investigate and apply international and federal standards, evaluate commercial SGML tools, and develop the customized processes needed for the transition and ensuing production-level processing. Significant foreign travel, particularly to EPO, is required for effective coordination and development.

The transition to SGML cannot occur without these tools and processes. The gains in operational efficiency and international exchange envisioned through standardized, modernized, and efficient information formatting and storage depend on the transition to SGML. Also dependent on the transition are electronic filing SGML input directly to PAM, standardized, open-system markup by the data base capture contractor, use of SGML data by PAM and APS, and conversion to a page description language for the printing by GPO.

b. Justification. This program promotes a higher level of quality in patent information and data exchanged internationally, and supports strategic international cooperation by playing a leadership role in determining the policies of patent offices throughout the world. Applying international and federal standards to the Patent and

Trademark Office (PTO) information products that are distributed throughout the world will strengthen intellectual property protection worldwide.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates: Initial Projection	Current Projection	Actual
SGML Markup of a subset of a weekly issue	09/95	12/96	
Trial markup of all patents in a weekly issue	09/95	06/97	
Production weekly load and dissemination using SGML	09/96	12/97	
Optional electronic filing prior to issue	09/96	TBD	
SGML application (EASY) processing with PAM	09/97	TBD	

For an explanation of these milestones, see Preliminary Standard Generalized Markup Language (SGML) Transition Plan, MTR 93W0000020, March 1993.

5.3 Acquisition Support (PT-96-07-N)

Prior to 1984, systems in the PTO were developed in-house with limited contract support. The shift to contractor-intensive development began with the award of the APS contract to PRC. Currently there are over 70 information technology contracts being administered by the PTO's two FIP procurement organizations. The result is that technical and contractual standards are difficult to enforce. For example: 1) contractors apply different LCMs and tools (program languages, DBMS, ICASE, and others); 2) there are too many hardware vendors and configurations, making operations and maintenance a nightmare; and 3) there are too many Contracting Officer's Technical Representatives (COTRs) having varying depth of experience with different approaches to controlling contract performance and costs.

To address these problems, the PTO has developed an Information Technology Acquisition Strategy with the following elements:

- Improve enforcement of technical and contractual standards. Have existing Task Order Managers report to one COTR; improve CIO contract administration by standardizing task order procedures among all existing contracts; infuse CIO standards into existing contracts (including Life Cycle Management, Technical Standards and Guidelines, Technical

Reference Model, project management tools, cost/schedule controls); and promote use of past performance throughout the entire contractual process.

- Consolidate existing contracts and establish fewer sources of supply. Increase the use of contracts with suppliers of COTS hardware and software; establish PTO-wide site licenses, when appropriate; transfer to in-house personnel all current infrastructure hardware and software subcontracts from PRC by September 1996; and establish fewer sources of supply for system development and maintenance using the System Development and Maintenance Acquisition (described in Section 5.3.1). This, in turn, is expected to alleviate the current problem of controlling multiple contractors who apply different LCMs and tools (such as ICASE, DBMS, and others) as well as the problem of controlling contractor performance with different COTRs who have different approaches and varying degrees of experience. This strategic element also includes consolidation and the establishment of fewer sources of supply for the following acquisition activities: facilities management (described in Section 5.3.3), end user support services (described in Section 5.3.4), system engineering and technical assistance (described in Section 5.3.5), independent verification and validation (described in Section 5.3.6), infrastructure hardware and software (described in Sections 5.3.2 for desktop computers, and 5.3.7 for data storage and the Document Management System).

- Enable contractor end-to-end responsibility. Consolidate/centralize similar functions within contracts, as practical and reasonable; build in flexibility by using technology infusion clauses to prevent obsolescence; include options for future generations that cannot be fully specified at the time of contract award; lengthen contract durations; and promote use of past performance throughout the entire contractual process.

- Encourage small business participation. Set aside work for small businesses in areas of facilities management, end user support, and independent verification and validation; establish minimum subcontracting goals for System Development and Maintenance acquisition, and system engineering and technical assistance acquisition; and establish contracts for specialized services and limited scope applications.

- Leverage in-house resources to support increasing customer workload. Pending the System Development and Maintenance and infrastructure

contracts, increase the use of Interagency Agreements for interim sources of supply; acquisition support; and other support services.

Detailed descriptions and current status information on each major acquisition, as well as other contract activities, are provided below.

5.3.1 System Development and Maintenance

Initiated in 1982, and subsequently re-negotiated in 1986 and 1990, the current Planning Research Corporation's (PRC) contract will end on September 30, 1996. At that time, there will remain considerable maintenance and enhancement of existing AISs and some new development work to be performed. Additionally, the PTO now develops and maintains its systems using a combination of in-house staff and a variety of contractors, some acquired competitively and others acquired through small business and other special programs. The PTO proposes to consolidate requirements for contractor support for the PTO system development and maintenance into one acquisition.

a. Description. Serving as the PTO's primary source for approximately $500 million in system development and maintenance support services, the PTO plans to acquire up to two System Development and Maintenance (SDM) contractors to succeed the current Automated Patent System (APS) contractor, and to provide support services to develop, modify, maintain, reengineer, and enhance AISs that support all business functions. The contract(s) will be used to identify and acquire commercial-off-the-shelf (COTS) software products and incidental hardware that support the system development life cycle. AIS-specific integration, engineering and technical support, and security activities are within the scope of this contract. PTO-wide integration, engineering, and technical support; PTO-wide security; Independent Verification and Validation; network management and operations; and computer center operations are not within the scope of this contract.

This acquisition is an Office of Federal Procurement Policy (OFPP) pilot project which will employ past performance as an evaluation factor. When originally proposed to OFPP, the PTO envisioned an estimated $750 million procurement encompassing system development and maintenance support, and operations services (e.g., network management and operations, computer center operations, and end user support). However, during subsequent acquisition strategic planning, the PTO identified two functional areas to be set-aside for small businesses/small disadvantaged businesses: facilities management and end user support. Refer to sections 5.3.3 and 5.3.4 for further description of these set-aside acquisitions. The PTO additionally identified a minimum 10 percent small business subcontracting goal to be applied against the total estimated SDM contract value of $500 million. Rather than further identifying the areas to be set-

aside for small businesses within the SDM contract, the PTO will require SDM offerors to specify their approach toward small business subcontracting (enabling the vendors to offer the best value to the Government based on their individual strengths and weaknesses).

On January 11, 1995, the General Services Administration (GSA) placed the PTO automated information system program, and the SDM acquisition, into its Time-Out program. As required by the Time-Out, the Department of Commerce (DoC) convened an Independent Assessment Team (IAT) to review PTO automation. The PTO received a generally favorable IAT report and, as required by the Time-Out, has submitted a Recovery Plan to GSA. Prior to release of the RFP, the PTO will continue the SDM acquisition strategy by completing oversight reviews, obtaining the delegation of procurement authority, soliciting questions to a draft proposal, and obtaining all requisite documentation approvals.

b. Justification. Failure to fund this effort will leave the PTO without contractual support (currently approximately 300 staff years) for automated information systems, or force the PTO to extend current contracts on a sole-source basis. Extending current contracts on a sole-source basis would have to be approved by the Department of Commerce and General Services Administration.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Issue draft Request for Proposals	07/95		08/95
Issue Request for Proposals	03/95	01/96	
Completion of current APS Contract	09/96	09/96	
Award of System Development and Maintenance Contract(s)	07/96	03/97	

5.3.2 Desktop Computer Acquisition

The desktop computing equipment to be acquired is part of the PTO Information Systems Infrastructure. The desktop computers will serve as the single device used to access all PTO current and planned automation information systems. These desktop workstations will also replace all current "Lot B" equipment used to access the Patent Application Location Monitoring System (PALM) and the Trademark Reporting and Management

System (TRAM). The Lot B equipment includes bar code readers, and terminal equipment.

a. Description. The PTO Desktop Computer Acquisition encompasses end-user personal computers, computer printer, associated peripherals and other computer products. This acquisition is the second major acquisition of desktop computers, having awarded the MICRO I contract in 1992. The products and services to be acquired will replace existing desktop computers that are used to support day to day operations and mission critical applications at the PTO. The PTO's goal is to acquire the latest, affordable computers. The current minimum technical requirements include Pentium based processors, configured with a full complement of storage and communication devices. In addition to serving as general purpose office automation workstations, the desktop computers acquired under this contract will replace the Examiner Search System (ESS) workstations (see Section 6.1.3). As replacements for the ESS workstations, the devices procured must be capable of a one-page per second image flip-rate. These specialized workstations along with robust office automation processing requirements demand fast processors, large amounts of memory and large capacity bus architectures.

b. Justification. The PTO currently depends on microcomputers and proprietary workstations to satisfy requirements for office automation and for access to existing mission critical PTO automated information systems. The PTO cannot support its mission without them. The desktop computers acquired will replace these and other workstations used to access existing major automated patent, trademark and administrative systems.

The equipment currently in use does not have the performance characteristics needed to operate concurrent applications and applications which display images needed by Patent examiners and Trademark attorneys to prosecute applications.

The PTO will soon deplete the current PTO sources of supply for microcomputers. Additionally, the quantity needed far exceeds that allowed for sources as small purchases, GSA schedule, DoC and other federal agencies' consolidated contracts and other sources. In order to bridge the gap between the current source of microcomputers and award of Desktop, the PTO will award an interim contract. This interim contract will expire at the time of award of the Desktop contract.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Requirements Initiative Approval-Desktop Computers	11/94		11/94
Award Contract for Desktop Interim	09/95		09/95
Issue Request for Proposal-Desktop Computers	03/95		08/95
Award Contract-Desktop Computers	09/95	06/96	

5.3.3 Facilities Management

Currently, the PTO uses a number of separate contracts to manage PTOnet and computer center infrastructure activities. This has resulted in complex coordination and execution of operations and maintenance activities required to troubleshoot problems and support system operations. Reductions in government FTEs have further exacerbated facilities management problems. The PTO has planned for a small business set aside acquisition that will consolidate the functions now performed by a number of 8(a) contractors, and provide additional services not currently provided through existing contracts.

a. Description. The contractor support to be acquired will support the Office of Computer and Telecommunications Operations. Services obtained will staff the Help Desk; and provide support to the network control center, data center operations, production control, output distribution, and the Boyers site. Additionally, the contractor will maintain PTO information technology equipment, including mainframes, file servers, and cable plant infrastructure.

b. Justification. It is essential that PTOnet and computer center equipment be maintained and expanded to provide increased access to production systems and data; ensure network connectivity; provide timely resolution of problems; and enhance communications and services which will result in the increased productivity of the PTO's employees.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates: Initial Projection	Current Projection	Actual
Award interim 8(a) contracts	06/96		
Requirements Initiative Submission	02/96		
Issue Request for Proposal	06/96		
Award Contract	06/97		

5.3.4 End User Support

The services covered by this initiative provide continued and improved operational support for all microcomputer hardware and software installed at the PTO. The PTO has planned for a small business set aside acquisition that will consolidate the functions now performed by a number of 8(a) contractors, and provide additional services not currently provided through existing contracts.

a. Description. This comprehensive contract will support the PTO's total office automation business needs. Included in these services are remedial and preventative maintenance, centralization of microcomputer receiving, setup, and installation functions. Testing and integration of all hardware and software prior to deployment to the users' desk will also be supported. Expert technical and customer service representatives to answer questions and troubleshoot problems, as well as qualified hardware repair technicians, are also an integral part of this support initiative. In addition, this effort includes a comprehensive program to ensure physical security, accountability, and inventory of all PTO microcomputer assets.

b. Justification. The PTO has experienced exponential growth in the use of networked computer workstations since 1991, and has become dependent on the use of office automation resources to support day-to-day operations. As the PTO increases the reliance on microcomputer technologies, additional functions are continually identified to improve efficiency through automation. Office automation activities are needed to ensure our users have the tools and resources necessary to perform their missions and objectives. By providing necessary resources, office automation can ensure increased system reliability, improved user friendliness, and customer satisfaction. Implementation of the initiatives set forth promises to be most cost effective while providing quality services resulting in increased productivity of our customers.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Requirements Initiative Submission	10/95		10/95
Issue Request for Proposal	06/96		
Award Contract	06/97		

5.3.5 Systems Engineering/Technical Assistance (SETA)

In 1988, an Industry Review Panel recommended the PTO retain a technical contractor to provide independent, unbiased, and objective expert advice and assistance on systems engineering and technical support issues with regard to the Automated Patent System (APS) effort. The PTO retained the Mitre Corporation and, in 1993, competitively awarded a SETA contract to SAIC to provide technical advice and assistance on the ongoing PTO-wide automation program (to include APS). Typical project/task titles include: systems engineering; functional and technical requirements definition, refinement, and analysis; simulation modeling; strategic and tactical planning; expert advice on technical issues related to acquisition planning, solicitation, and evaluation; technology assessments; and technical support of rulemaking.

a. Description. The System Engineering/Technical Assistance (SETA) contract supplements the PTO's technical staff by providing personnel with expert technical skills in systems analysis and design; computer, electronics, and communications engineering; operations research and systems and security architecture. System capabilities to be supported include, but are not limited to: the design, development and implementation of central computer systems; office automation capabilities linked together through a PTO-wide communications network; capabilities for full deployment of the automated patent text and image search, storage and retrieval systems; capabilities providing automated support of administrative and management functions; automation of patent application receipt, assignment, and tracking functions, including the electronic receipt of biotechnology patent applications; development of optical character recognition capabilities; enhancements which allow terminal access to all resources needed for trademark application receipt and processing; and the development of advanced capabilities for information dissemination and exchange.

Contractual activities for SETA support continue on an on-going basis. In FY1994, the SETA contract was shortened by one year (from 5 to 4), and the dollars allocated to the fifth year were spread over years 2, 3, and 4 to increase the yearly maximum dollar limits.

As such, the contract will be recompeted one year earlier than originally planned. The current SETA contract expires March 31, 1997. It is expected that this contract will be recompeted in order to continue SETA activities. The PTO estimates the recompeted contract to have a total contract value of $40 million, of which a minimum of 10 percent is to be provided to small business subcontracts.

b. Justification. As noted by the Industry Review Panel, the PTO requires an independent source of technical advice for more effective program management of the APS system. The PTO's requirement subsequently expanded to include independent technical assistance on the PTO-wide automation program. Failure to fund SETA acquisition efforts will result in the need for the PTO to retain additional FTEs to provide an independent source of technical advice for PTO automation projects.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Begin re-competition activities for SETA support	09/95	01/96	
Issue RFP for SETA contract	02/96	04/96	
Award SETA contract	12/96	12/96	

5.3.6 Independent Verification and Validation (IV&V)

Since 1986, the PTO has contracted for project management and IV&V support services, initially in support of APS development. Over time, this support has been expanded to include support to other developmental and operational efforts within the PTO's agency-wide automation program. The program encompasses the design, development, and implementation of new, and the refinement of existing, automated information systems supporting virtually all aspects of PTO operations. In 1994 the PTO competitively awarded its most recent IV&V contract to Galaxy Scientific Corporation, a small business.

a. Description. Independent Verification & Validation (IV&V) contractor personnel evaluate and review documentation for accuracy, completeness, consistency, and adherence to compliance standards. Additionally, IV&V contractor personnel review test specifications and procedures, in conjunction with PTO managers and development contractors, to ensure consensus prior to test execution. Using automated tools, they also monitor and evaluate the performance of the development contractor's regression testing,

and analyze SAT documentation to verify the traceability of requirements to the system. IV&V contractor personnel further participate as SAT observers, whenever necessary.

IV&V contractor personnel provide quality control for software system configuration through periodic audits of both application and system software against the baseline. Application software is re-audited with each new baseline release, while system software is audited on a less frequent, "as required" basis. IV&V contractor personnel also provide PTO-wide security and project management support.

Contractual activities for IV&V support continue on an on-going basis. The current IV&V contract expires February 28, 1999. It is expected that this contract will be recompeted as an estimated $25 million small business set-aside in order to continue IV&V activities.

b. Justification. If this work is not funded, there is a high risk of functional and technical errors (affecting critical, important, and minor portions of PTO automated information systems) occurring during the operation of PTO AISs. Each error occurrence potentially limits customer (e.g., patent examiners, trademark attorneys, financial analysts, personnel specialists) quality and productivity until the error is corrected, and often results in extremely expensive changes to these systems. Early detection and correction of errors using baseline testing and IV&V activities reduces this risk at a point in the project activities when low costs are required to change the system. Additionally, OMB Circular A-130, Appendix C, mandates many of these activities as part of the sensitive system certification process for the Patent Application Location and Monitoring (PALM), Trademark Reporting and Monitoring (TRAM), and Cash Receipts and Deposit Accounts (CRDA) systems. If this work is not funded, the PTO would need to allocate personnel to perform these activities. Also, customer focus group concerns about system implementation problems uncovered the fact that these systems did not undergo rigorous systems acceptance testing and IV&V procedures.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Begin re-competition activities for IV&V support	02/97		
Issue RFP for IV&V contract	02/98		
Award IV&V contract	02/99		

5.3.7 POSIX Compliant Data Storage and Processing and Document Management System

The objective of this acquisition is to establish a means to easily obtain storage, processing, and software that will permit migration of the PTO's Automated Information systems to an open client-server based architecture. Storage devices will augment and eventually replace existing Rapid Access Devices (RADs) and High Density Devices (HDDs) with new technology devices. The new devices will take advantage of price and performance improvements which have occurred in the ten years since the original RADs and HDDs were acquired. This contract (or contracts) will also provide for a family of code-compatible POSIX compliant processors as well as document management system software to provide the tools necessary to manage documents, to include: replacing the current document load processes; enhancing document storage and retrieval; and facilitate electronic dissemination of text and image documents.

a. Description. The Storage Devices, POSIX Processors and Document Management System Acquisition will provide the next generation of HDDs and RADs, a compatible family of POSIX processors for use in the APS and other PTO automated systems (including PAM), and a document management system which will encompass all support functions for text and image data that include, but are not limited to, software tools to manage the data stored on the APS system; enhancement to the load of the data to the APS; dissemination of the data resident on the APS to the public and other customers on demand and for managing and controlling data for such systems as Pre-Grant Publications and Trademark Assignments. The procurement strategy for this acquisition has not been finalized. In the short term, POSIX processors and storage devices will be procured as needed through interagency sources. A draft Request for Comments for storage devices, POSIX processors and Document Management System software will be issued to industry for comment. After analyzing the comments received, the PTO will decide whether to proceed with acquiring the hardware and software under one procurement or separate it into multiple (independent) procurements.

b. Justification. The POSIX processors storage devices and the Document Management System will provide the hardware and key software packages needed for major PTO client/server applications. The selected hardware and software are intended to become the standard hardware/software suite for such major applications as the APS and PGPub, and other client-based applications such as RAM. This standard hardware/DMS approach provides PTO managers a simplified method to obtain storage devices, as well as simplify development and maintenance efforts.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Storage/DMS first RFC issued	01/96		
Procurement Strategy defined	03/96		
Storage//DMS second RFC issued	06/96		
Contract(s) awarded	09/96	05/97	
HW and SW available	06/97		
New RADs in production	09/97	09/98	
New HDDs in production	09/98	09/99	

5.3.8 Interagency Agreements

An area of growing importance within the federal government is the use of Interagency Agreements to acquire information technology products and services. These agreements fall into several different categories; however, they all have the advantage of streamlining the acquisition process by allowing the PTO to use existing contracts between information technology vendors and other federal government entities.

The PTO established its Interagency Agreement program in January 1995. Since then, the Acquisition Management Division has identified sources for information technology products and services, established administrative and ordering procedures, and used Interagency Agreements to acquire hardware, software, and services for mission-critical and time-critical programs. One such agreement with the Air Force, completed May 1, 1995, provided Time-Out independent assessment consultation expertise (refer to Section 5.3.1 for further information).

a. Description. The Acquisition Management Division presently has the following Interagency Agreement initiatives underway:

1. Government-Wide Agency Contracts (GWACs). These are contracts implemented by federal agencies that have a percentage set aside for participation by other agencies. An example of a GWAC is the Navy Super-Minicomputer Program that the PTO used to acquire information technology products and services for PGPub.

2. GSA's Information Technology Service (ITS). ITS is a relatively new initiative by GSA that allows federal agencies to use existing GSA contracts for

information technology products and services. In cases where required services and products are not available through existing contractual vehicles, ITS will find a source of supply and negotiate a contract.

3. Federal Systems Integration and Management Center (FEDSIM). As part of GSA, FEDSIM provides access to information technology products and services, either via its own in-house expertise or through an array of existing contracts. FEDSIM may provide services for several PTO projects including RAM and PACE II.

4. Defense Contract Management Command (DCMC). DCMC is contained within the Defense Logistics Agency, and provides a wide range of pre-contract and contract administration services to federal government agencies. DCMC may be used for acquisition support for several initiatives, including SDM.

5. National Institute for Standards and Technology (NIST). NIST is providing PTO-wide system architecture, security, and standards expertise.

b. Justification. The Interagency Agreement program provides competitive alternatives to the traditional acquisition methods of obtaining specialized or unique hardware, software, and technical services. This results in expedited delivery of required products and services to customers, and significant reduction in overall acquisition costs. Additionally, this program enables the PTO to better leverage its in-house acquisition and contract administration expertise to handle an increasing workload with existing personnel.

c. Status. Interagency Agreements are used to support PTO projects; therefore, milestones for the program are not identified separately from the supported projects.

d. Project Budget. In general, Interagency Agreement costs comprise the value of the goods and services acquired, plus approximately five percent of that value for administrative fees. However, budgets for the Interagency Agreement Program are not identified separately from the supported projects.

5.3.9 Other Contract Activities

In addition to activities associated with major acquisitions, the PTO's Acquisition Management Division conducts and monitors numerous other acquisition and contract activities using in-house staff.

a. Description. The PTO incurs management costs and fees as a normal part of maintaining current contracts. This includes PRC/SDM management and "overhead"

costs (award fee; fees for labor, hardware, and software); System Engineering/Technical Assistance (SETA) contract costs for technical project management; and Independent Verification and Validation (IV&V) contract costs for technical project management.

Many activities of the current PRC contract, notably ownership and administration of its hardware and software subcontracts, have been transferred to the PTO. However, the PTO requires further activities for a sole source contract extension to the current PRC contract, to include development of appropriate documentation, obtaining necessary approvals, and participating in negotiations. Scheduled for FY1996 is an anticipated one-year extension to the current APS contract.

PTO-wide site license agreements (e.g., Microsoft Enterprise License Program, WordPerfect/Novell Master License Agreement) provide great time and cost savings to the government. To provide additional licenses, support, maintenance, and upgrades for the current standard suite of software, the PTO will conduct a Commercial-Off-The-Shelf (COTS) Software acquisition. In addition to providing licenses, the contract will also allow for testing and evaluation of new software.

b. Justification. Contractual activities continue on an on-going basis. In FY1996, and if approved by DoC and GSA, the PTO will extend the period of performance for APS contract by at least one year to support the 6-9 month transition between the APS contractor and the two SDM contractors. Activity and product milestones for the COTS Software acquisition are:

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Requirements Initiative Approval	02/96		
Issue RFP for COTS Software	03/96		
Award Contract for COTS software	09/96		

Chapter 6

ONGOING AND PLANNED AUTOMATED INFORMATION SYSTEMS DEVELOPMENT AND MAINTENANCE

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6.1 Patent Systems (PT-96-03-N)

6.1.1 Automated Patent System (APS)

For two centuries the PTO has carried out its mission in an environment which relied upon the availability of paper search files which were reviewed by patent and trademark examiners to establish the patentability or registerability of an application. The collections of documents contained in the examiners' search files have grown to more than 34 million documents and, thus, have become increasingly inefficient and costly to manage and maintain. The growth of the paper search files promises to increase even more rapidly in the future. In particular, patents issued by foreign countries have become increasingly important in establishing the validity of a U.S. patent, while the PTO's ability to organize and maintain a searchable collection of foreign patent literature has become increasingly limited.

a. Recognizing the challenges faced by the PTO, the Congress enacted Public Law 96-517 which directs the PTO to develop automated alternatives to its manual processes which were mostly paper-oriented and posed considerable restrictions. This mandate is being carried out by implementing state-of-the-art computer data and retrieval systems applicable to all aspects of PTO's operations. Since the early 1980's the PTO has pursued this objective and is making considerable strides into the 1990's, including the forging of new partnerships with foreign patent offices and the initiation of a major developmental effort to accept electronic application filings.

b. In 1984, the PTO awarded a contract to develop the Automated Patent System (APS). The APS consists of five major AISs: Classified Search and Image Retrieval (CSIR), Patent Application Management (PAM), Classification Data Systems (CDS), Text Search, and Global Patents. Additionally, two other APS AIS development and enhancement efforts, Non-Patent Literature and Appeals Case Tracking System (ACTS), have been planned for the future.

c. <u>APS Workload Performance Statistics</u>.

- PTO is responsible for the accessibility, accuracy, and integrity of 36 million patent and patent related documents (referred to as the search files).

- CSIR allows on-line image retrieval of all (currently 5.9 million) U.S. patents, with approximately 2,000 patents added each week.

- CSIR/Patent and Trademark Copy Sales has the capacity to supply 10,000 patents (85,000 pages) per day to the fee-paying public.

- In FY1995, the PTO received approximately 216,500 patent applications. Estimates by 2000 to exceed 234,000 patent applications.

- Text Search allows patent examiners and public customers to access the full-text of over 1.8 million U.S. patents issued since 1970 (growing at a rate of 125,000 patents per year). In addition to U.S. patents, Text Search allows patent examiners to access the English translations of approximately 2.5 million Japanese Patent Office abstracts.

Within each of these AISs, many subsystems are in the process of being enhanced, replaced, or modified due to costly software maintenance, changing customer requirements, international treaty requirements, and to support functions not previously automated. From 1983 to 1995, the PTO spent approximately $560.7 million on contract support in developing, enhancing, and operating the APS.

6.1.2 Classified Search and Image Retrieval (CSIR)

The Classified Search and Image Retrieval (CSIR) system provides image searching of all U.S. patents and patent-related data stored in image format. Major CSIR enhancement activities are: deployment of CSIR capability to existing and future desktop workstations; creation of examination support tools; and development and enhancement of Global Patent image search capabilities.

6.1.3 Desktop Workstations

The APS workstation is a UNIX1-based device that is used by PTO text databases, and accesses external commercial databases. Image searching capabilities using a custom-built, proprietary hardware and software system (using two high resolution monitors) was first provided to Group 2200 in 1988. This capability was then extended to two additional examining groups (2100 and 2300) in FY1990 and FY1991. This device was referred to as the first generation workstation.

After upgrading the hardware image searching capabilities using a new custom-built, proprietary hardware and software system (using two high resolution monitors) it was

1 UNIX is a trademark of AT&T Bell Laboratories.

provided to Group 1200 and a public search facility in FY1993. This device was referred to as the second generation workstation.

In FY1996, the PTO will begin deploying desktop workstations to patent examiners. When this last phase of deployment is complete in FY1999, every patent examiner will have immediate access to both CSIR and text search capabilities at their workstation. Because of the importance of the desktop workstation efforts to the Patent Corps, the Desktop Workstation project is designated as a matrix management team project. As the matrix project team plans are developed for the Desktop Workstation and approved by the Business Council, overall project concepts, and the associated activities and funding, may change.

a. Description. The PTO plans to migrate over the next 3 years to the Windows NT operating system at the desktop workstation to provide the seamless interface with all of the PTO's office automation and business applications. To help achieve this migration, the PTO will replace all existing PCs and terminals on the desktops of the PTO employees and the image workstations in the Patent cluster rooms, as well as the PC workstations in the trademark examining attorney "bullpens", with enhanced PC based text/image workstations.

The PTO will deploy 700 PC based text and image workstations to patent and trademark examiners by December 1996. The patent examiner workstations will have both the Unix and Windows operating systems installed which will provide access to the patent text and image data as well as the office automation applications at the examiner's desktop. However, the access will not be seamless until the Unix-based business applications are replaced by Windows NT applications in 1998. The PTO plans to complete the installation of the PC based text and image workstations to all patent examiners by December 1997. PALM and TRAM will be accessible by PC workstations over PTOnet by September 1996. Trademark examining attorneys will also have access to additional Trademark business and office automation applications from their desktop by July 1996.

In the interim, since existing workstations consist of hardware and software components which are expensive to maintain and upgrade, the PTO is currently developing a shared use workstation to take advantage of advances in workstation technology. This workstation will integrate a set of commercially available and custom-developed software and hardware components. In April 1995, 48 shared use workstations and 8 group printers were installed.

b. Justification. The successful implementation of the desktop workstations will satisfy the number one need identified by the patent examiner customer focus group. As

an intermediate step to deploy highly capable desktop workstations to the Patent Corps, the "shared use" workstation will give the PTO an opportunity to test capabilities, refine user requirements for the desktop systems, gain experience using different workstations, and mitigate risks. The postponement of the Desktop Workstation will adversely impact the Patent Examiners' ability to efficiently carry out their function.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Group 2200 able to use 1st generation workstation for image searching	11/88		11/88
Group 2100 able to use 1st generation workstation for image searching	08/90		08/90
Group 2300 able to use 1st generation workstation for selected computer arts	07/91		07/91
Remainder of Group 2300 information available for users	06/93		06/93
Group 2300 able to use 2nd generation workstation for image searching	06/93		06/93
Group 1200 able to use 2nd generation workstation for image searching	06/93		06/93
Establish public facility and provide 2nd generation workstation for image searching by the public	07/93		07/93
48 shared use workstations and 8 group printers deployed and ready for use	03/95		05/95
Client standard operating system established	10/95		10/95
Begin deployment of desktop workstations to examiners	01/96	01/96	
Continue deployment of desktop workstations to examiners	10/96	10/96	
PTOnet "A" to PTOnet "B" 100mb link completed	09/97		
Complete deployment of desktop workstations to examiners	06/98	12/97	
Complete deployment of desktop systems to other patent customers	12/98	12/97	
Complete conversion to Windows NT	07/98		

Complete software maintenance release	08/99	
Begin replacing obsolete workstations that have exceeded their useful life with current equipment	11/99	11/99
Begin hardware upgrade	06/00	
Complete software maintenance release	08/00	
Complete software maintenance release	08/01	
Complete hardware upgrade	09/01	

6.1.4 Examination Toolbox

Tools are software products that will assist patent examiners by enabling them to use the Automated Patent System (APS) more effectively. Examination Tools software products facilitate access to existing text search, image browse, and other APS subsystems and also include, but are not limited to, facilitated access to commercial databases, patent literature, non-patent literature, and classification data; various examiner help systems; and office automation tools for generating office actions and forms.

In the past, examination tools have been developed within the Patent Examining Corps in an ad hoc manner in order to meet the demand for automated tools that enhance the business operations of examiners and classifiers. To date, there is no established process to coordinate the implementation of customer-oriented and customer-developed tools. The intent of the Examination Toolbox project is to provide a structured approach to ensure that necessary examination tools are implemented in a timely fashion and are supported by the Office of the Chief Information Officer throughout their useful life. The project will also establish a dissemination process for the Patents cost center on the standards and procedures that will be supported for developing tools. Examination Toolbox is designated as a matrix management team project.

a. Description. After establishing an overall target capability and defining a framework that supports the capability throughout the evolution of the project, the Examination Toolbox project will plan, develop, deploy, and enhance automated Patent Examiner tools in a phased process. Tools products planned for FY1996 include:

- Forms creation (PTO-892, etc.).
- ActionWriter
- Commercial Data Base Access: The Examination Toolbox is completing current activities to provide examiners the required network access that

increases their access to commercial databases. Full deployment of this capability occurred in December 1994.

b. Justification. Currently, many Examination Toolbox activities are imbedded and/or replicated in numerous projects. By bringing these similar, often duplicative, activities into one project, the PTO can develop a common, standard interface and set of tools that minimize examiner training time, facilitate the development of new applications, provide a standard environment for new application development efforts, and minimize PTO automation costs.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Provide all examiners network access to commercial databases	12/94		12/94
Install Folio Views for Manual for Patent Examination Process	03/95		03/95
Deploy electronic forms	09/95	01/96	
Rewrite and enhance ActionWriter	09/96		
Deploy enhanced PCT form software	09/96		
Provide post retrieval text and image search tools	09/96		

6.1.5 Pre-Grant Publication (PGPub) System

Unreasonable delay in the disclosure of technology contained in patent applications is undesirable. To minimize the delay of such disclosure, legislation has been introduced which will uniformly require the publication of a patent application 18 months after they have been filed. The PTO will publish sufficient information about pending applications to allow the knowledgeable reader to make a determination whether technology described is relevant to the reader's interests. Such publication is expected to result in a public demand for access to the contents of the application file in its complete state at the time of publication as well as any time thereafter. The PGPub system is intended to satisfy both requirements.

a. Description. This system will enable publication of patent applications 18 months after the effective filing date (or at any earlier time, if requested by the applicant). It will incorporate published application data into the PTO's paper and electronic search files. It will also allow efficient access to the contents of the application search file to

patent examiners and members of the public who require such information subsequent to publication. Once fully deployed, the PTO has planned to transfer PGPub maintenance and enhancement activities to the PAM project. The PTO also will evaluate the PGPub project with respect to the PAM project as a prelude to determining the PAM strategy.

b. Justification. This work responds to an international agreement signed by the Secretary of Commerce Ronald Brown and Japanese Ambassador Takakazu Kuriyama. It will provide an immediate, dramatic improvement in the availability of intellectual properties.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Begin business process reengineering and early design work for pre-grant publication (PGPub) system			09/94
Mechanisms in place to assure publication of patent applications 18 months after effective filing date and when so requested by an applicant	01/96	01/96*	
Addition of limited search capabilities to PGPub system	06/96	09/96	
Begin evaluation of PGPub system with respect to PAM project	09/96	09/96	

*Depending on legislative and budgetary actions

6.1.6 Patent Application Management (PAM)

PAM is a long term system development program to enhance the reengineered patent processes through information technology. The system will replace paper-based manual procedures with the ability to accept electronically filed applications and allow for the electronic processing of those documents through the prosecution of the application and publication of the granted patent.

During FY1996 to FY1997, PAM will have two major on-going activities: maintenance and migration of the current PALM system, and initiation of the concept phase for the

development of the PAM system. Several proof-of-concept projects will be initiated to validate the concepts from the patent reengineering project.

6.1.6.1 Patent Application Location and Monitoring (PALM) System

PALM is the current workflow tracking and status reporting system for patent application processing. PALM provides current application file location, status, title, legal representation, and other statistics about examiner production and docket information. The PALM system operates on a UNISYS mainframe with over 2,000 display terminals, bar code readers, and printers directly connected to the mainframe. It processes more than 2.3 million transactions per month.

a. Description. The PTO completed a technical assessment of PALM to determine its stability and ability to meet the PTO's requirements. The analysis validated that the PALM system is too inflexible to be effectively maintained and enhanced. The results of the analysis identified areas of the current PALM system that should be stabilized and made recommendations for the redevelopment of the system. As a result of the technical assessment of PALM and on-going efforts to improve system development processes, several major efforts are underway to improve the PALM system. The OCIO is in the process of developing a quality assurance plan, a configuration management plan, unit test plan, regression test plan and associated procedures. Code stabilization efforts have been initiated. The OCIO staff is currently restructuring staff and contractor resources to better support the existing system. These efforts will result in improvements to PALM, but they are not sufficient to adequately meet the business needs of the PTO.

The PTO plans to initiate a project to migrate the current PALM systems to an open systems architecture that conforms to PTO's technical reference model. Replacement of the PALM system using "open systems" components and an architecture that facilitates modification will require less resources to operate and enhance. In order to do more with less, greater use will be made of commercial-off-the-shelf (COTS) software products and development methods that are model based. PALM must use business objects that are familiar to patent customers. The OCIO has developed a strategy to accommodate changes that are occurring more frequently than in the past, which must be implemented in ever shortening periods of time and will support reengineered business processes. The migration from PALM to a system based on a modern structure will be achieved within the context of the patent "To-Be" models. Major enhancement activities to be included as part of the migration project include: the replacement of the PALM inputting system (Patent Application Correction and Entry - PACE) with PACE II; the replacement of non-standard terminal devices with PC devices; and the migration of these PALM end user devices to PTOnet.

Until PALM is migrated to the open architecture, it will continue to be stabilized and enhanced to meet the PTO's changing requirements. PALM will require extensive modifications to support patent legislation for Pre-Grant Publication (PGPub) and century date change implementation efforts.

b. Justification. PALM provides necessary workflow tracking, patent application status reporting, and examiner production and docket information on a daily basis. If on-going PALM work is not fully funded, all maintenance and enhancement activities will be delayed (the implementation time will be increased by 25-to-50 percent), postponed, or canceled. Failure to support the PALM system may result in increasing patent pendency, and anticipated changes in the patent law (the 20-Year Term Patent and Pre-Grant Publication) may not be implemented on a timely basis.

Because PALM was developed using 1970's technology, it is becoming increasingly difficult to find adequate staff to maintain the system. It is becoming unlikely that PALM will continue to meet PTO's requirements at a minimum level. The current PALM system is too rigid and inflexible to meet the PTO's current and changing requirements. Continuing to maintain the status quo will become more costly as more resources are required to keep the system running. It may not continue to be possible to maintain the status quo. A PALM failure would have a major negative impact on the PTO's ability to process patent applications. In addition, the current PALM system cannot evolve/integrate with the system to support the patent reengineered processes (e.g., PAM). Not migrating PALM now will increase the cost and complexity of these systems.

c. Status. Activity and product milestones are:

	Completion Dates		
	Initial	Current	
Tasks/Products	Projection	Projection	Actual
PALM users provided with additional screens and update transactions for the inputting subsystem (PACE)	10/94		04/95
PTO file ordering system implemented	05/95		08/95
Users able to access PALM certification system	08/95		08/95
PALM modified to support 20-year term and provisional applications		10/95	08/95
Modify PALM to process PGPub applications	01/96		

Deploy PALM on PTOnet early access capabilities to Patent Corps	03/96
Award PALM redesign contract	03/96
Complete PALM stabilization activities to include current system document, code stabilization, implementation of CM, QA, test plans and procedures	06/96
Complete planning and preliminary analysis for PALM redesign	09/96
Complete PALM on PTOnet development	10/96
Implement century date change	04/97
Complete PALM stabilization activities to include data modeling and PACE II deployment	09/97
Complete detail analysis and design for PALM redesign	09/97
Begin deployment of redesigned PALM	09/97
PALM users able to access RAM for data	09/97
Complete PALM on PTOnet deployment to the Patent Corps	09/97
Complete development of redesigned PALM	09/97
Begin PALM migration	09/97
Begin deployment of redesigned PALM	0997
Complete deployment of redesigned PALM	09/98
Begin integration of redesigned PALM with PAM	09/99
Complete integration of redesigned PALM with PAM	09/00

6.1.6.2 Electronic Filing

In 1995, a draft Concept of Operations was developed for electronic filing of patent applications.

a. Description. An Implementation Guide will be developed to specify the format for submitting applications electronically to the PTO. The Electronic Application System (EASY) project will provide one instance of authoring and validation software that will allow patent applicants to create and submit electronic patent applications in accordance with the Implementation Guide. This software will serve as the basis for electronic application filing to be implemented jointly by the PTO, the EPO, and WIPO. The EASY software will be placed in the public domain.

b. Justification. Electronic filing enables the PTO to accrue the benefits of electronic processing of patent application (e.g., reduced labor required to convert paper applications into an electronic form) when the PAM system is fully implemented. If funds are not provided, electronic filing in the PTO will be delayed.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Complete draft Implementation Guide	06/95		06/95
EASY completed to conform with Implementation Guide	11/95	12/96	
Complete final version Concept of Operations		06/96	
Complete floppy diskette version of Implementation Guide		12/96	
Complete on-line version of Implementation Guide		12/97	
Begin pilot testing electronic filing with document management system prototyping effort	09/97		
Begin electronic filing	09/00		

6.1.6.3 Patent Application Management (PAM) System

The PTO uses an essentially manual process for processing patent applications. Applications are currently submitted in writing, with the PTO receiving the application in its Mail Room. Subsequent pre-processing includes organizing the documents submitted, assigning a serial number, classifying the application, and routing the file to the appropriate examining group. Examiners search published technical literature to determine whether an application for patent should be granted. If the patent is granted, information is extracted from the application for post-processing. A contractor photo composes the patent, and prepares it for printing by the Government Printing Office. The PTO loads the final patent into its CSIR and Patent Text Search database to support examiner searching and for printing copies needed for patent copy sales. All transfers of files through the process are now done manually, with clerks physically carrying the files in shopping carts.

The PTO has developed a concept of operations for a reengineered patent process to improve the quality of granted patents and improve the processes used to prosecute the

patent applications. The PAM system will be developed to support the re-engineered patent processes.

a. Description. Objectives of PAM include: reduced costs of patent application processing; improved quality through workload and process management; reduced patent pendency; facilitated international exchange of patent information to improve the protection of intellectual property; improved effective access to PTO information by internal users and the public; improved management reporting capabilities; improved security; and improved efficiency of patent application management. The PTO plans to develop the PAM system using a combination of in-house and contract staff. The PTO will use existing and planned PTO hardware and software components, consolidate PAM requirements into PTO-wide acquisitions of other components, and contract for the labor and other resources needed for the system development and implementation. During FY1996, PAM work will consist of beginning the concept phase for the system and initiating proof-of-concept activities to validate concepts from the reengineering project. Subsequent to successful PGPub implementation, PAM systems will be developed further.

b. Justification. If this work is not funded, the PTO will need to hire additional patent "pipeline" personnel. Additionally, it would adversely affect the PTO goals of maintaining pendency times, enhancing examination quality through workload and process management, and reducing patent pipeline costs.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
PAM efforts redirected to developing PGPub System		09/94	09/94
Complete economic analysis			11/95
Begin PAM system analysis	09/96		
Complete high level data and process models	09/97		
Begin PAM design, analysis, and development	09/98		
Complete PAM version 1	09/99		
Complete PAM version 2	09/00		
Complete PAM version 3	09/01		

6.1.7 Classification Data System (CDS)

The Classification Data System (CDS) maintains classification data for all patent and application documents. CDS supports the U.S. patent classification, foreign patent classification, issued patent list, and patent file maintenance.

From 1982 to 1992, Power Computing provided remote batch processing services to support the classification function. PTO decided to bring the classification system operation in-house in 1992, and awarded a contract to TAMSCO to continue development of CDS.

Placed in production in January 1993 (FY1993), CDS Version 1.0 supports the U.S. patent classification system by tracking Miscellaneous Transfers, Weekly Issues, and Clerical entry of Reclassification project data. The current configuration consists of a combination of microcomputers and SUN workstations, used by 40 employees, attached to a SUN server accessible via PTOnet. The CDS server transmits captured Weekly Issue data to the Amdahl mainframe to update APS patent data. Additional APS updates are made every other month to incorporate changes made through Miscellaneous Transfers and Reclassification projects.

The PTO plans to incrementally improve CDS to permit classifiers to incorporate images of U.S. patents, global patents and non-patent literature, once they become available, during classification/reclassification processes. Because of its importance to the Patent Corps, CDS is designated as a matrix management team project.

6.1.7.1 CDS Version 1.1

a. Description. The CDS Version 1.1 project will provide patent classifiers with the ability to reclassify groups of patents in an easy to operate desktop microcomputer environment. On-line help, access to indices, and class/subclass definitions support are envisioned to assist classifiers in accomplishing their everyday job. The CDS 1.1 project will build a classifier proof of concept prototype classifier workstation environment with access to images for the projects under reclassification. Two options will be considered. One will be a networked architecture; the other will be a standalone PC. In the network version, the classifiers PC will be networked to a Windows NT image/project data server. In the stand alone version images will be extracted to a server from APS. For each project, the image data for the project will be selected on the server to be copied to a removable hard disk drive. This disk drive will be plugged into the individual classifiers PC to view patents.

Professional Reclassification. Currently, proposed Classification Schedules and Definitions are entered in a word processor format, and the new classification data for each patent is handwritten on a cover sheet attached to the patent. Version 1.1 will allow classifiers to enter the new proposed Classification Schedule and accompanying Definitions for a Reclassification Project, as well as capture new classification data associated with the patents in each reclassification project. The CDS 1.1 will also reduce the number of intermediate steps necessary to move this data to APS, and will be able to produce reports such as the final Reclassification Order.

b. Justification. Patent examiners extensively rely upon the U.S. Patent Classification system throughout the patent application examination process. Typically, reclassification projects analyze thousands of patents in a class or subclass, and order these patents in a manner that enables examiners to most efficiently find the prior art to determine the patentability of an application. If the CDS Version 1.1 is not funded, classifiers could still use the current CDS system. However, classification functions will be sharply constrained as inefficient techniques/technologies are used against an overtaxed database. Additionally, patent examiners will be required to search through an increasing number of patents within a class/subclass rather than having their searches streamlined through reclassification of the patents. This will adversely impact the PTO goals of promoting effective access to PTO information, and enhancing examination quality through workload and process management.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Complete professional reclassification system as a conceptual prototype (Version 1.1)	10/95		09/95
Begin use of prototype for selected reclassification projects	10/95		11/95
Plan for PC upgrades for reclassification system and implement to classifier	09/96		

6.1.7.2 CDS Version 2.0

a. Description. The PTO plans to apply business process reengineering techniques to improve the efficiency and effectiveness of the classification function. CDS Version 2.0 will implement the reengineered business processes and procedures.

Preliminary planning for this version addresses the incorporation of text analysis techniques and integration of the CDS into the CSIR Examiner Search System.

CDS 2.0 enhancement efforts will upgrade the hardware and existing CDS 1.1 system software, and include functionality resulting from the business process reengineering effort. This effort will include reexamining the current classification process, analyzing and evaluating alternative systems, and using advanced software capabilities to provide access to prior art for classification and examination purposes. A few of the potential Version 2.0 requirements/features that are being considered for business reengineering analyses activities include:

- International Search Tools (IPC Manuals, Catchword, Concordance, Family of Patents, etc.)
- Dispute Decision Database
- Art location through patent family and classification linkages
- Group printers for the Office of Classification Operations
- Computer aided rule based information retrieval systems
- Patent image utilization in classification functions, accessible via desktop
- Matrix Classification (definition/schedule development, application dispute resolution, field of search development)
- Automated foreign language translation support
- Full integration of capability to add drawings to definitions

b. Justification. Patent examiners extensively rely upon the U.S. Patent Classification system throughout the patent application examination process. Reclassification projects analyze thousands of patents in a class or subclass, and order these patents in a manner that enables examiners to most efficiently determine the patentability of an application. If the CDS Version 2.0 is not funded, classifiers could still use the current CDS system. However, classification functions will be sharply constrained as inefficient techniques/technology are used against an overtaxed database. Additionally, patent examiners will be required to search through an increasing number of patents within a class/subclass rather than having their searches streamlined through reclassification of the patents. This will adversely impact the PTO's goals of promoting

effective access to PTO information, and enhancing examination quality through workload and process management.

c. Status. Activity and product milestones are::

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Classification function begins business process reengineering activities	12/96	12/96	
Begin concept phase for CDS 2.0	10/97	10/97	
Image ready professional reclassification (2.0) prototype available on image-type workstation	09/98	09/98	
End of implementation of image-ready professional reclassification with access to electronic databases (Internet and other commercial databases)	03/99	03/99	

6.1.8 Text Search

During FY1986, the PTO installed a mainframe and loaded patent text information for all U.S. patents issued since 1975. After the initial testbed deployment of text search capabilities in July 1986, the mainframe was upgraded and full deployment of the text search system was achieved by installing 100 text-only search terminals throughout the Patent Examining Corps. Additional text search functionality was added in 1988 with the availability of the English abstracts of Japanese patents and in FY1990 with the extension of the coverage of the database to include the text of virtually all U.S. patents issued since 1971. The accessibility of the text search system also was extended beyond the Examining Corps to users of the Public Search Room (in April 1989) and to 14 Patent and Trademark Depository Libraries (PTDLs) in September 1991. Since 1991, however, the text search system has not undergone any major enhancements or modifications.

The text search system allows examiners, classifiers, and public users to search and retrieve patent text information. This system provides a customized user search interface and access, using terminals or microcomputers, to the Chemical Abstracts Service's licensed software product called Messenger. In addition to U.S. patent text, Messenger accesses databases such as Japanese patent abstracts. Messenger customers rely on Classification Data Systems (CDS) for relating patents with class/subclass data.

The large costs required to maintain the customized Messenger system, and the functionality currently being provided through commercial text search products (e.g., relevance ranking, indexing), are major motivators for undergoing the enhancement of the current text search capability (referred to as the Messenger replacement project). Additionally, using the information gained from the Messenger replacement project, text search project activities that support other PTO applications are envisioned. Text Search is designated as a matrix management team project.

a. Description. At the start of the project, the PTO plans to research and evaluate modern, commercially-available text search and retrieval systems with respect to their usefulness and technical feasibility. The knowledge gained through these activities will be applied to the effort to define the scope of the replacement text search system for the PTO. The PTO intends to work with NIST and other text search experts to exchange knowledge and take advantage of other efforts currently underway, ensuring a solution that may be used by other Government agencies.

Based on this knowledge, the PTO will begin the activities required to ensure that the appropriate hardware, software, and other resources are available for development and deployment of the replacement text search system. Assuming only one year is required for development of a production system, deployment is expected to span three years due to the following major considerations: the entire Messenger database will have to be converted to a format required by the new system; all Messenger customers will have to be retrained, and the complete phase-out of Messenger will not occur until the new system is fully deployed to all Messenger customers. Text search project activities that support other PTO applications (e.g., CDS, Trademarks, Assignments, and external databases) will not be explicitly addressed by the Text Search project until the replacement of Messenger has been completed.

b. Justification. If this work is not funded, the PTO could still use the current patent text search system. However, Messenger software license and software maintenance costs will continue to increase, and public and examiner text search services will be sharply constrained as inefficient techniques/technology are used against an overtaxed database. This will adversely impact the PTO goals of promoting effective access to PTO resources and enhancing examination quality through workload and process management.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Text search replacement System Boundary and Architecture defined	08/96	08/96	
Complete concept phase		09/96	
Begin acquisition phase for replacement text search system	10/96	10/96	
Complete acquisition phase for replacement text search system		09/98	
Begin deployment phase for the replacement text search system	11/98	12/98	
Continue deployment of replacement text search system	09/00	09/00	
Complete deployment phase for the replacement text search system	06/01	09/01	

6.1.9 Global Patents

In support of international treaties, examiners currently use a manual process for searching foreign patent data, except for a small subset of Japanese patent abstracts with which examiners may use the current automated text search system. While patents issued by foreign countries have become increasingly important in establishing the validity of a U.S. patent, the PTO's ability to organize and maintain a searchable collection of foreign patent literature is limited.

Global patent information is defined to be U.S. patent text and image data, first page foreign patent text and clipped image data, foreign patent full image and mixed-mode data, and the foreign patent search tools data such as the European Patent Office's document data base (DoC-DB), and various technology classifications, indices, thesauri, and concordances. The goal of the Global Patents project is to make domestic and international patent information available to the examiner on the desktop and later, from other authorized search locations. The target capability is a seamless search and retrieval and an integrated set of tools to support the efficient use of global patent information. This capability must be extensible to accommodate evolving international and industry standards and PTO infrastructure technical capabilities. The Global Patents project is designated as a matrix management team project.

a. Description. The PTO has entered into agreements with the Japanese and European Patent Offices to acquire digital images of patents issued by the principal patent-issuing organizations of Europe and Asia. The Global Patents project will incrementally develop the capability to search and retrieve global patent data, including first page information and the full documents, from the examiner's desktop.

The implementation of Global Patents Information (GPI) Version 1.0, will provide an initial capability to access foreign patent first page data comprising an English abstract of the foreign patent text (Japanese and European) along with a clipped image of the representative drawing figure. As a by-product of this developed capability, GPI 1.0 will also enable standard access to U.S. patent text information stored on Messenger.

A later Global Patent version will include the capability to access the full images of the first page documents (versus the clipped representative images provided in Version 1.0); to extend accessibility of Global Patent information to the public; and to include the capability to access the full images of all foreign documents. Beginning in FY1997, the PTO plans to complete the loading of the full first page images by FY1998. The PTO will begin loading the full images of all foreign documents into Global Patent Library Storage in FY1999. Current estimates indicate this database will require in excess of 20 terabytes of storage. The PTO is not certain about the storage growth rates pertaining to future documents. Based on this preliminary information, the PTO estimates completion of the full document image data load to occur in FY2002.

b. Justification. While patents issued by foreign countries have become increasingly important in establishing the validity of a U.S. patent, the PTO's ability to organize and maintain a searchable collection of foreign patent literature is limited. The Global Patent project supports the PTO's patent application examination mission by promoting effective access to patent-related information. Additionally, the Global Patent project assists with the worldwide protection of intellectual property.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Begin project to load full images of First Page project documents	03/96	06/96	
Complete First Page (clipped image and text) prior-art search file operational (to entire Corps)	04/96	01/97	

Begin expansion of prior-art search file to include First Page full images	01/97	01/97
Begin expansion of prior-art search file to include the complete full image Global Patent database	07/97	01/97
Complete loading of First Page full image search file	08/98	09/98
Begin loading remaining Global Patent documents (Global Patent Library Storage)	10/98	10/98
Continue loading Global Patent Library Storage	09/00	09/00
Completion of loading Global Patent Library Storage	08/02	09/01

*This milestone reflects the fact that the First Page full image file is a subset of the full image Global Patent search file.

6.1.10 Non-Patent Literature

As part of the examination search process, patent examiners must search existing literature (e.g., magazine or periodical articles, advertisements, books) provided by the applicants or available to the public. Currently, some non-patent literature (NPL) (informally assigned to a class/subclass) exists in the paper search files used by examiners. The NPL paper search file component has not been inventoried, and little is known about the characteristics of the documents it contains. Additionally, examiners have access to collections of NPL maintained by the Scientific and Technical Information Center (STIC) and, by extension, to outside institutions which support the Interlibrary Loan Service.

APS has no internal, automated NPL search and retrieval capabilities, but does provide an interface to external electronic search data bases which contain non-patent literature. Also, no formal business process exists to: (a) identify NPL which should be added to the paper search file in a structured fashion; (b) maintain an inventory similar to the Master Classification File of NPL documents which have been placed in the search file; or (c) remove NPL from the paper search file when it has outlived its usefulness.

a. Description. The objective of this project is to provide patent examiners with a NPL electronic search and retrieval capability. This includes access to external databases, bringing them in-house, and/or capturing literature provided as part of a patent application. The scope of this project encompasses the following activities:

1. Development of PTO policy regarding the searching of NPL in electronic form, and resolution of legal issues associated with the creation of an NPL database containing copyrighted material.

2. Development of requirements, based on developed policy and conforming to the resolved legal issues. This will involve the development of new business processes and data modeling for the orderly addition of new NPL to the APS as well as the removal of NPL when the literature is no longer relevant.

3. Identification of the documents which will form the electronic NPL database, to include numbering and assigning NPL to U.S. patent classifications or otherwise categorizing the documentation for retrieval, and converting into an electronic form compatible with APS requirements. NPL documents may exist in either text or image form within APS.

4. Design, development, testing, and deployment of the initial NPL operating capability. In parallel, the documents needed for the initial NPL electronic database will be loaded.

5. A follow-on evaluation of NPL usage by patent professionals will take place to provide the foundation for further development of NPL capabilities.

b. Justification. Automating the search and identification of NPL strengthens intellectual property protection worldwide by enabling examiners to accurately determine the patentability of an invention using all available information, not just the information provided with the patent application. If funding were not provided, examiners would have to continue tedious and time-consuming manual searches through known documentation, often missing critical information that could affect their decision. This manual process places the PTO at greater risk of litigation due to the hit-or-miss nature of the process, and potentially increases patent pendency as each examiner's workload increases. Access to external databases was a priority need identified during the patent examiner customer focus group meetings.

c. Status. The NPL project is in the initiation phase. High-level activity and product milestones are:

	Completion Dates		
	Initial	Current	
Tasks/Products	Projection	Projection	Actual
Begin definition of NPL	10/98	10/98	

6.1.11 Appeals Case Tracking System (ACTS)

The Board of Patent Appeals and Interferences (BPAI) tracks information on each appeals case. This includes production information for each of three Examiners in Chief who review the case and decide to accept, deny, or accept in part an appeal, and the appropriate result (decision and decision date). Implemented in 1990, the Appeals Case Tracking System (ACTS) records and manages this information using 6 PCs attached to an ACTS server running the dBase IV software system. However, because of the extremely low budgetary constraints involved with the development of the original system, certain reports have had faulty data. These errors are being corrected.

a. Description. The BPAI program sponsor is reviewing other ways to obtain performance/production data, including a possible PALM interface. Until a decision is made for planning and budgetary purposes, development and maintenance activities are assumed to continue through FY1997. The planning for ACTS includes an effort to redevelop ACTS to follow the Life Cycle Management (LCM) methodology.

b. Justification. Like the PALM system, the most important information from ACTS are the production statistics related to each Examiner in Chief's performance. This information is used for performance evaluations and subsequent bonuses in accordance with agreements with the labor unions. The current system employs dBase technology and must be replaced.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
BPAI personnel able to use redeveloped ACTS system	FY96	04/97	

6.1.12 Patent Workbenches for Searching Computer Software Prior Art

Recent court actions will require the USPTO to search the prior art in computer software. While the USPTO has supported several initiatives in this area, specific immediate needs focus on the potential for automation to provide near-term solutions. The USPTO intends to work with the computer software industry in seeking potential solutions. Industry is aware of the needs facing the USPTO and several offers of comments and suggestions

have been received. Areas of concern to the USPTO to which automation might assist are:

- Availability of prior art (assist through improved and/or electronic access),
- Improved examiner productivity (to lessen impact of FTE limitations),
- Electronic access to software documentation (via cooperative efforts with industry).

The likelihood of the USPTO receiving and processing patent applications in computer software require planning to ensure effective and near-term automation solutions.

a. Description. This initiative will be open to several possible avenues of investigation, including cooperative efforts with the EPO, JPO, and the U.S. software industry. The Microsoft Patent Workbench provides a useful example. This initiative will include industry and market surveys, assessments of available software and hardware tools, sources for computer software prior art, and access to new tools of legacy data.

In particular, Microsoft, for internal purposes, has developed a Patent Workbench Search System (PWB) that offers attractive functionality and a database containing software patent documents. Under this initiative, the USPTO will establish and evaluate a pilot of this system. Assuming the PWB would be offered, the initiative would determine desirable functionality and processes for future USPTO computer software searching.

The purpose of piloting the Microsoft Patent Workbench (PWB) system in the Electrical Cluster (ECluster), under the direction of the Electronic Information Center (EIC), is to determine if the system can provide an easy to manipulate interface and search engine for locating prior art in software-related areas. Recent decisions of the CAFC (In re Lowry and In re Alappat) have called into question approaches examiners have traditionally relied upon in rejecting applications concerning software. The EIC is working with the ECluster to find sources of prior art and methods to enhance retrieval of prior art. The PWB may provide one way to assist examiners.

The PWB, a Windows-based program, is made up of a search engine (searches the database index for matches of the specified criteria); a text viewer which displays the text version of the documents (with annotation capabilities); an image viewer which displays the scanned image of the document; and the citation viewer. The system will ultimately boast of a "universal interface" which will allow for searching multiple resources (patent and non-patent) from the same search screen (1 query, multiple databases).

The system which will be piloted in the EIC will be limited to patent data in the computer software arts. This system will have several functions not available in current search tools available at the USPTO. Those functions are: 1) patent citation searching, 2) annotation capability, 3) cut and paste to word processor, 4) a graphical interface, 5) customizable query boxes, 6) the ability to run several queries simultaneously, 7) e-mail links, and 8) use of SGML text.

b. Justification. This initiative provides an opportunity to "leap frog" over existing USPTO search systems to those that will be needed to search computer software prior art. Turning to the computer software industry for suggestions and for insights from their experience offers several benefits, not the least of which is the opportunity to leverage small USPTO investments into large payoffs compared to previous APS and SUS costs. Among the benefits anticipated are:

1. An opportunity to determine if a diversity of work benches may better serve the USPTO's disparate needs than a monolithic approach,

2. Crystallizing the need to separate the databases from code or processes that manipulate the data for future flexibility and maintainability,

3. Evaluate the maintenance costs of various work bench approaches, particularly COTS.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Develop program plan	07/95		07/95
Acquire PWB	10/95	02/96	
Begin Patent Workbench evaluation period	10/95	02/96	
End Patent Workbench evaluation period	04/95	08/96	
Report Evaluation results	05/95	09/96	

6.1.13 Scientific and Technical Information Center Automated Information Systems

6.1.13.1 Automated Biotechnology Sequence Search System (ABSS)

The purpose of the ABSS system, administered by the Scientific and Technical Information Center (STIC), is to provide a PTO capability for prior-art searching of molecular sequences in support of Group 1800 (Biotechnology). Subscriptions to all of the world's major sequence databases are received by STIC and stored on the ABSS system, and are updated monthly. The current size of all the commercial sequence databases is 1.7GB. These databases double in size approximately every 12 months. Further, the Computer Readable Form (CRF) processing component of the ABSS evaluates and stores Sequence Listings from patent applicants submitted in mandatory electronic (computer readable) format. This CRF data is organized to comprise the PTO's own sequence databases, including sequences from pending and issued patent applications. These data bases are also searched, especially for interference detection since many sequences in pending patents are not yet available in commercial databases. The ABSS system consists of a network of UNIX workstations and servers, and several COTS sequence searching software tools. The system is available 24 hours a day, seven days a week, to support examination efforts. This system has been the key factor in sustaining and improving patent pendency rates on cases involving molecular sequence issues.

Since the ABSS was established in 1989, the system has received several improvements in response to examiner requirements for faster search turnaround and more precise search capabilities based on the applicant's changing sequence claims. Two major enhancements to the ABSS system have been completed by the STIC during FY1995. First, new search software, MPSRCH, running on a massively parallel computer, has been added to the network. This new software and hardware offers search speeds of up to 100 times faster than searches conducted on the older system. Further, new search strategies are now possible based on the processing speed available, allowing search comparisons to be conducted that previously were not possible because of processing time constraints. Second, a customized Graphical User Interface (GUI) to MPSRCH has been implemented to automate many repetitive search commands and parameters necessary under the older system, thus greatly accelerating the search process.

a. Description. Based on current Biotechnology industry patent application trends and exploding gnomic research activities, continuing major ABSS system architecture upgrades will be required through FY1996 and FY1997 to maintain and improve the level of service now being provided by the ABSS system. Implementation

of advanced searching methodologies will be continued, including improvements to front-end GUI development to further automate search set-up and execution, as well as improvements to search result post-processing techniques useful in filtering out the most relevant search information. The computer systems security and software validation will require evaluation and improvement, and the patent molecular sequence submission software program will be enhanced.

b. Justification. The ABSS system has been the key factor in sustaining and improving patent pendency rates on cases involving molecular sequence issues. Many of the processes made available by automation would be impossible, not just inefficient, without automation. For example, the comparison of one coded DNA sequence of several hundred characters against thousands of similar sequences would be impossible without the use of computers, especially at the analytical level required by the patenting process. If the growth in the number of sequences in commercial databases (100% increase in size every 12 months at current rates), and in the number of sequences to be searched by the PTO occurs as expected, the hardware and software will continue to require modifications to maintain or improve overall performance speed and sequence searching sensitivity. Of particular concern is the PTO's ability to process patent applications containing sequence submissions on a scale ten or more times the size of submissions seen previously. The largest sequence listing submitted to date contained approximately 17,000 sequences. Newer submissions being formulated by applicants will apparently contain over 170,000 sequences, with some over 300,000 sequences. Given these projected workloads, the need for continual improvement in the PTO's ability to process sequence searches is imperative.

Primary benefits of the ABSS system are:

- Elimination of excessive man-hours of time required to search sequences manually against thousands of sequence records in several databases. The use of automated searching is the only practical method in this case.

- Expeditious turnaround of sequence search analyses using more efficient hardware/software, which results in more rapid biotechnology patent decisions and improved patent examining corps productivity.

- In-house operation of the ABSS sequence searching systems provides greater control over the production process, improved system reliability through direct maintenance actions, lower overall cost versus dial-up service, and greater security over sensitive sequence information contained in patent applications.

- Elimination of time-consuming and error-prone keying activities by receiving sequence submissions in electronic format and using electronic records to generate search queries.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates: Initial Projection	Current Projection	Actual
Acquisition of massively parallel computer	09/95		09/94
Acquisition of advanced sequence search software	09/95		09/94
Improvement of Data Capture System for CRF	09/95		03/95
Improvement of Patent software program for submission of biotechnology sequences	09/95		09/95
Second massively parallel computer, hardware upgrade, software upgrade	09/95		09/95
Development of GUI Interface	04/95		04/95
Update ABSS Computer Security Plans, Risk Assessments, and COOP	04/95		04/95
Technology Assessment Forecast report	06/95		06/95
Hardware upgrade/software upgrade	09/95	06/96	
Hardware upgrade/software upgrade	12/96	12/96	

6.1.13.2 Non-Patent Document Delivery System

After potentially relevant background references have been identified, they must be provided to the examiner. If the books, articles, or other materials are available in the STIC non-patent collections, a copy can be delivered directly to the examiner or the examiner may come to one of the library branches to collect the material. If a non-patent reference is not readily available in the STIC collections, the STIC staff will attempt to borrow or acquire a copy of the information from another source. This activity requires cooperation and networking with libraries and commercial document providers across the country, access to databases listing available titles, and detailed records of exactly what has been requested by whom and the progress of the acquisition process. For copyright law compliance, the STIC must purchase its own copy of any title from which five references published in any one year have been requested during a five-year span, so records of how many times a reference is requested must also be maintained.

a. Description. The STIC currently uses Cuadra STAR database software for internal tracking and record-keeping required by the non-patent document delivery service. It is anticipated that the STAR system eventually will be available to the examiners on PTOnet, so that they may determine the status of their requests at any time. A hardware upgrade will be needed in FY1996 to maintain the existing level of service.

b. Justification. In order to provide requested references to the examiners in a timely manner, cooperation between STIC branches and other libraries is essential. Automated record-keeping, tracking, and communication allow STIC staff to quickly acquire and deliver requested materials to the requesting examiner. The Document Delivery System is also necessary to maintain records used to guarantee STIC compliance with copyright laws.

Primary benefits of an automated Document Delivery System are:

- Ability to report in response to Examining Corps inquiries about progress of individual requests or the volume of requests made by Group or Art Unit
- More accurate budget projections for borrowing/photocopying references are available
- Better response time and higher success rate on filled requests

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Document delivery tracking system implemented			09/93
Ariel document transmission system in testing and implementation			09/94
Hardware upgrade	09/96	09/96	
Document delivery tracking system available to examiners via PTOnet	TBD	TBD	

6.1.13.3 Automated Library Access And Control System

STIC has been using automated processes for collection access and control since 1977. Without the access to and control of the collection allowed by automation, the STIC

would be unable to efficiently provide references from the published non-patent literature to the examiners. This would severely impair both the quality and quantity of patent application processing. A new library system was acquired in FY1994, and will be fully implemented in FY1995. The new system is client/server based and incorporates a Windows interface to improve patron access to a wide array of available information services. The library system is compatible with systems being developed for the Corps, and it is anticipated that this system will be made available to the examiners via PTOnet. The PTO automated library system is also used by the DoC Main Library and the DoC Law Library.

a. Description. The newly acquired system will be implemented during FY1995. During implementation, the hardware platform will be maintained at its current level, but there will be some software upgrading and data manipulation required. A hardware and operating system upgrade is planned for FY1996. There will be a pilot project in cooperation with GR 1800 to measure network traffic and system usage by the Corps.

b. Justification. Primary benefits of an automated library access and control system are:

- Materials in the various STIC collections can be quickly and easily located by STIC staff and examiners.
- Examiners can identify information references available and electronically request a photocopy from STIC.
- Statistics can be gathered on collection use for better allocation of resources to subject matters most heavily used.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Contract for automated library system awarded			09/94
Automated library system implemented			09/94
Pilot program to test network traffic & usage	09/95		09/95
Automated library system available to examiners via PTOnet local area network	09/95		09/95
Hardware/operating system upgrade	09/96		

6.1.13.4 Foreign Patents Access System (FPAS)

The Foreign Patents Access System (FPAS) provides automated access to current foreign patent publications from the major national patent offices and organizations. In the last three years, the official international exchange medium for patent documents among patent offices has shifted rapidly from paper and microfilms to CD-ROM. In fact, at the beginning of 1994, the Japanese Patent Office, which produces more patent documents than all the rest of the world combined, cut off paper to the USPTO and all other patent offices, substituting CD-ROM's. FPAS is designed meet this challenge and accommodate the growing collection of over 2300 CD-ROM's; the collection is expected to grow at the rate of 1000 per year. The system is currently used by patent examiners and the public to access patent documents from 18 countries, including the U. S., and documents from an additional 42 organizations or countries are to be added shortly. Several new CD-ROM's are expected to be received in the coming year.

The token-ring LAN runs custom developed FPAS software on Novell Netware and includes a variety of CD-ROM storage devices, 8 user stations, and 2 QMS high-speed printers. The server has been upgraded to a Pentium 100 and a 10 gigabyte has been added to accommodate index data. Users can search bibliographic information of foreign patent documents in the collection, view documents, and make copies, all on a self-service basis. Per-page fees are collected automatically with a networkable payment card system, and data on system use and fees are stored automatically on the server.

a. Description. Currently and extending into FY1996, the network server and the database software are being upgraded to accommodate the rapidly growing index and to facilitate an experimental connection to PTOnet. Hardware additions in FY1996 and FY1997 will include additional jukeboxes and servers, and additional hard-drive capacity. Ten to twelve software packages will be acquired and/or developed to support new CD-ROM variants, new jukebox types, expanded system and searching requirements, and network automation features.

b. Justification. FPAS is currently the only source of retrievable current foreign patent copies at the USPTO. In many cases, documents are no longer available on paper. Consequently, both the public and examiners rely heavily on FPAS to find foreign copies and information. Without the system, the information would not be available. Examiner's (and the public's) use of foreign information is escalating rapidly, and use levels are expected to rise even faster once the Global Patent System is available on the Automated Patent System. Technology is currently being explored on the FPAS system that will allow desktop delivery of foreign patent copies through the Foreign Patent Electronic Delivery System discussed below.

Benefits include:

- Exceptionally high quality copies of foreign documents.
- Automation of the foreign document delivery process, supporting larger workloads without massive increases in staff to support the system.
- Time and cost savings to users because bibliographic data can be taken from the system without on-line searching, and copies can be generated quickly and automatically.
- The USPTO shares in the benefits of reduced printing and shipping costs brought about by international exchange of CD-ROM's rather than paper. Handling and processing time for documents at the USPTO is shortened and early availability of documents is increased.
- Funds for public per-page copying go to the PTO rather than to a contractor.
- The amount of space required for storage of the foreign front file is considerably decreased.
- Actual user and financial data are available to program managers and the Finance Office permitting improved overall planning procedures and financial accounting.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Improved search	09/95		09/95
Addition of new jukeboxes	09/95		09/95
Addition of new CD-ROM's	09/95		09/95
Develop PTOnet interface (examiners)	09/95		09/95
Addition of fax-back capability	09/95		09/95
Addition of abstract CD-ROM's	09/95		09/95
Develop PTOnet interface (Finance)		09/96	

Hardware/software upgrade (1)	09/95		09/95
Addition of IPC catchword index		09/96	
Hardware/software upgrade (2)	09/95		09/95
Hardware/software upgrade		09/96	

6.1.13.5 Foreign Patent Electronic Delivery System (FPAS 2)

The Foreign Patent Electronic Delivery System is to be implemented in early FY1996 to provide foreign document copies directly to the desktop and/or work areas of the patent examining corps. The system is to consist of a CD-ROM module comparable to the FPAS described above, but more advanced, a microfilm module, and a paper module. Copies are to be ordered over PTOnet and, if feasibly possible, returned over PTOnet or other electronic means (fax).

a. Description. The entire CD-ROM module will be put in place in late FY1995 and early FY1996 using technology and procedures developed with the FPAS system above, most notably the electronic delivery module. The system will be devoted to examiner services to ensure maximum performance, speed, and comprehensiveness in support of the examining corps. Prototype versions of the other modules will be put in place in FY1995 and procedures for their use developed by staff. The three modules will be developed as stand alone, then integrated into one system.

b. Justification. Once examiners are able to search foreign bibliographic information on the APS and locate sets of relevant documents, they will require ready access to drawings and full text of documents. Making the documents from STIC paper, microfilm, and CD-ROM collections electronically available, will save examiners considerable time and effort. Retrieval will be made as automatic as possible to reduce the amount of effort required by examiners to search. No other electronic copy system can be made available in time to meet the anticipated demand.

Anticipated benefits, aside from those cited for FPAS are:

- Information in general, thus improving the thoroughness of the search effort.
- System can be maintained and updated on the same cycles as FPAS, ensuring consistency, accuracy, and efficiency.
- Improved productivity of STIC Foreign Documents staff in delivering documents.

- Copies can be made (and stored) from existing collections without need for a massive, time-consuming conversion effort before electronic data becomes available to users.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates: Initial Projection	Completion Dates: Current Projection	Completion Dates: Actual
Ongoing development of technology and procedures through FPAS	09/95		09/95
Procurement of equipment	09/95		09/95
Facility construction/equipment integration	09/96		
Development of PTOnet interface	09/96		
Implementation/Integration of 3 modules	09/96		
Enhancement of PTOnet interface	09/96		
Hardware/software upgrades	09/01		
Addition of new CD-ROM's/jukeboxes	09/01		

6.1.13.6 CD-ROM Reference Products/Commercial Database Services

In recent years, full-text articles and other scientific and technical information have become increasingly available on CD-ROM. Use of CD-ROMs is expanding in cases where full-text data is available for easy access and where commercial databases can be searched off-line at reduced cost to the PTO.

The STIC staff and the examiners heavily use commercial on-line databases to identify relevant non-patent literature references. These databases are accessed from microcomputers equipped with modems and standard communications software, such as Procomm. Vendors of these services, such as Dialog, Orbit, Questel, STN International (Chemical Abstracts), and Mead, charge a fee based upon the period of time a user is connected to the system and the number of citations found and saved. The STIC now has approximately 20 microcomputers which are used to access these on-line databases.

a. Description. In upcoming fiscal years, STIC plans to increase utilization of optical-based scientific and technical literature, and to integrate electronic library/virtual library concepts into daily STIC operations. It is anticipated that CD-ROM and on-line sources of full-text and citation data will be made network-accessible.

b. Justification. CD-ROM and on-line commercial database products are essential in identifying pertinent non-patent references. It may be economically feasible for the PTO to purchase CD or tape subscriptions of some of the more heavily used indexes, abstracts, and bibliographies, if they are available, and run them on PTO equipment to avoid connect-time charges. Primary benefits of CD-ROM Reference products and commercial database services include:

- On-line databases are vital to the identification of relevant references, especially in the fields of chemistry and biotechnology.
- Locally maintained sources may save money compared to connect-time charges by on-line database vendors.
- Full-text sources allow references to be retrieved at the time of the search, making further efforts to locate print or microfilm materials on-site or elsewhere unnecessary.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Acquire additional CD-ROM sources	09/94-09/00	09/95-09/00	
Upgrade hardware/software for CD-ROM use	TBD	09/95	
Integrate CD-ROM towers with Automated Library System and/or PTOnet	TBD	TBD	

6.1.13.7 Electronic Information Center

The Electronic Information Center (EIC) is a satellite facility established to serve Groups 2300, 2400, and 2600, to enhance literature access in the art areas examined by these groups. Materials located in this facility are primarily electronic databases and CD-ROM based indexing systems. Full-text documents available electronically are the cornerstone of the collection.

a. Description. In addition to upgrading the number and quality of commercially-available reference sources included in the collection, STIC is planning development of a Computer Prior Art Collection (CPAC). This will be a database of resources to be made available to the examiners in the computer arts. The resources will

be identified through the use of commercial databases and Internet searches, and experts within and outside of the PTO and will not be limited to any type of format.

b. Justification. The Electronic Information Center is a facility designed to meet the growing need of patent examiners for comprehensive access to non-patent literature search resources on the computer arts. Sources for prior art in this field are widely disbursed throughout private industry, the government, publishers, and universities, among others. The Electronic Information Center will house an extensive collection of materials, in print and electronic format, to support the examiners of computer arts.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Purchase of CD-ROM towers	09/94		09/94
Acquisition of CD-ROM sources	09/94		09/94
Development of computer prior art collection	09/95		09/95

6.2 Trademark Systems (PT-96-04-N)

Trademark Systems Division (TSD). Trademark laws assist businesses in protecting their investments in the promotion of goods and services, and safeguard consumers against confusion and deception in the marketplace as to the origin of goods and services. The Federal trademark registration system is essential to decisions relating to the marketing of new products and services, as demonstrated by the fact that major production and marketing decisions are often delayed until there is a reasonable indication that an application for trademark registration will be allowed. The rendering of an initial opinion on the registerability of a trademark provides an early indication of whether a trademark may ultimately register. Automated processing is an integral part of the workflow relating to the examination of trademark applications and maintenance of registrations. Automated information systems supporting PTO's Trademark activities affect management control of trademark application processing, the quality of trademark data, and the efficiency of many operations.

6.2.1 Trademark Reporting and Monitoring (TRAM) System

TRAM, implemented in April 1983, provides support to all facets of Trademark operations. TRAM operates on the UNISYS A16 computer system and includes a database consisting of bibliographic text and prosecution history data for more than 1.6

million marks. TRAM supports Trademark operations from the receipt of a new application in the PTO to photocomposition activities related to the publication of the Trademark Official Gazette (TMOG) and post registration activities required to maintain registered trademarks. Bibliographic data in TRAM for pending applications and active registrations is updated on a real time basis and is used to produce the TMOG, which is sold to the public in machine readable form and is extracted for use in the automated search system, X-Search. The TRAM System maintains current location and status information on applications and registrations enabling the PTO to promptly determine the status of any file and to locate files in Trademark work areas or the warehouse. Management information produced by TRAM allows Trademark managers to monitor employee production, track workflow, control backlogs, and review the quality of data stored in the system.

TRAM support consists of two major activities: the maintenance of existing software, and migration of the system to an open system architecture which will improve the efficiency and effectiveness of Trademark operations and satisfy customer needs for a more user friendly, (better) TRAM system.

6.2.2 TRAM Maintenance

TRAM maintenance activities include processing Engineering Change Requests (ECRs) and System Problem Reports (SPRs) submitted by Trademark and other PTO users to modify and/or correct problems in existing software.

Engineering Change Requests will be generated by Trademark personnel to meet the following commitments and goals:

- Reduce the time to mail filing notices to 14 days.
- Examine new applications and provide a written first communication regarding registerability within three months of the filing date.
- Determine the registerability of trademarks within 13 months of receipt of the application in the PTO.
- Issue Notices of Abandonment within 45 days of the date the file was abandoned.
- Issue Notices of Publication within 30 days of the date the file is approved for publication.

- Mail Certificate of Registration within 7 days of registration.
- Process "Intent to Use" actions in the trademark law offices.
- Reduce the number of trademark law offices from 13 to 9.
- Centralize "change of address" function.

a. Description. Until deployment of the next generation Trademark Information System (TIS) is completed, hardware and system software upgrades including processing of ECRs and SPRs must take place. In a month, an average of 29 ECRs and 2 SPRs are received. The average backlog in each month is 23 pending ECRs and 3 pending SPRs. Contractor resources assist in the maintenance of existing TRAM software, thus freeing PTO resources to work on other critical Trademark development efforts.

b. Justification. The current TRAM System provides operational support for all Trademark processing activities. Failure to fund TRAM maintenance support will have a negative impact on virtually all Trademark operational goals, including pendency, publication of the Trademark Official Gazette, service to Trademark users within the PTO and to public users of Trademark products and services. If contractor support is not funded, available PTO resources will be limited to processing critical SPRs and ECRs. Delays in processing of less critical ECRs and SPRs will occur resulting in increasing workload backlogs.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Processing of ECRs and SPRs	09/99	09/01	

6.2.3 TRAM Migration

The TRAM system is an aging legacy system that has a system architecture that does not take advantage of the technological improvements that have been made in hardware, software, and communication products and services. In order to reduce operating costs and eliminate duplicative hardware and communication networks, TRAM must be migrated to make use of "open systems" products and services. The implementation of an "open system" based on information engineering principles will result in a system architecture that facilitates modification thereby requiring less resources to operate and

enhance. The TRAM migration strategy represents a systematic, incremental approach which will significantly improve operating efficiency and customer satisfaction. Employees will be able to complete their work tasks from the PCs that are located on their desktops and will no longer be required to use several types of devices located in different work areas to complete their normal work.

The TRAM migration will be achieved within the context of the trademark "To-Be" model. The TRAM migration effort and Trademark business process reengineering process are interdependent and require planning coordination. The redesigned TRAM system will begin the incremental implementation of the reengineered trademark business processes. The TRAM migration will result in the implementation of the following capabilities:

- A Single Terminal Access Facility (STAF) that will allow individuals to access all Trademark information and services from PCs located on employee desk tops. Trademark processing is currently supported by several communications networks, each designed to support a specific functional application. The networks are not capable of communicating with each other thereby requiring Trademark system users to use several different devices to complete their normal work tasks. Under the STAF concept, PTOnet will be used to support all Trademark processing needs by providing the following services on a PC located on an examining attorney's desk.

- Office Automation (word processing, spreadsheets, electronic mail)

- TRAM access

- X-Search

- The TMOG is currently published by the Government Printing Office (GPO) using a text tape generated by the TRAM Photocomposition System. Images are inserted in the document by a manual cut and paste operation. The new Publication System will generate the TMOG by integrating images and text on the file sent to the GPO.

- Implementation of an electronic communication capability with trademark customers. This capability will allow customers to forward electronic documents to the PTO and to receive electronic documents created by the PTO. The PTO generated documents will include office actions and Trademark notices.

- The PTO will be involved in the 104th Congress trying to amend the Lanham Act to simplify the filing requirements for trademark applications and registration maintenance actions. The feasibility of using Optional Character Recognition and Intelligent Character Recognition technology to process standard form Trademark applications and related documents will be assessed.

- The migration of the TRAM data base from the A16 mainframe computer system to an ORACLE data base that operates on a server. The data base will be restructured to take advantage of the features of a relational data base and to make the data format more representative of trademark documents.

- Replacement of A16 COBOL programs with software developed using current state of the art products and languages. This software replacement will result in reduced system operating and maintenance costs and a system architecture that supports continuous modifications of business processes.

a. Description. In FY1996, the PTO plans to replace all of the remote video display terminals (VDTs) and Bar Code Readers (BCRs) with industry standard microcomputers and new BCR devices. These devices will be networked on PTOnet, replacing the current UNISYS poll select network for TRAM processing. TRAM queries and database update transactions will be redesigned to take advantage of microcomputer capabilities and to provide a more user friendly interface. UNISYS B38 and B28 microcomputers currently used for data entry and text editing activities will be replaced with industry standard microcomputers which communicate via PTOnet. As part of the redesign effort, COBOL programs will be replaced by software developed using state of the art languages with re-usable components.

Enhancing the TMOG process to integrate text and image data will reduce trademark disposal pendency and will improve the accuracy of the electronic images of figurative elements. The ability to communicate electronically with customers and the use of standard forms will reduce the cycle time for office actions. The scanning of incoming trademark documents will enable the implementation of reengineered business processes which will reduce processing cycle times and improve operating efficiency.

In FY1998, the TRAM data base will be migrated to a server environment and operate with the ORACLE data base software product. When the migration takes place, all TRAM software will have been converted to use state of the art languages and tools.

b. Justification. The two major suggestions for improvements submitted by the Trademark Customer Focus Groups were: 1) access to all automated systems from a PC on the desktop and 2) a more user friendly, (better) TRAM system. If contractor assistance for TRAM maintenance is not fully funded, single terminal access to all Trademark systems and significant improvements in the system architecture and "user friendliness" of TRAM will be delayed or canceled because PTO resources will have to be used to maintain critical current system processing and PCs would have to emulate "dumb" terminals, thereby failing to make use of the capabilities of the PC. The result would be a failure to provide the desired upgrades to the TRAM system.

The TRAM migration effort represents the best opportunity to satisfy expanding trademark needs while minimizing the resources necessary to adapt the system to continuously changing business needs. In order to "do more with less," greater use must be made of modern programming languages and Commercial-Off-The-Shelf products and development methods. The TRAM migration strategy accommodates changes that are occurring more frequently than in the past, and that must be implemented in ever shortening periods of time.

The enhanced TMOG Publication System will reduce Trademark pendency and reduce publication costs. If funding is not provided, publication costs will remain at current levels or increase and the lengthy photocomposition schedule will continue to extend pendency. The use of electronic data interchange methods to allow customers to submit documents to the PTO using standard formats will allow the PTO to reengineer trademark business processes. The processing of standard formats, whether received electronically on in paper format, will simplify processing and reduce operating costs. The use of standard transaction formats is consistent with international trademark law harmonization efforts and the trademark "To-Be" model.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Reduce PTO Law Offices from 13 to 9	10/95		10/95
Deploy initial STAF capability allowing queries from desktop PCs	09/95	12/95	
BCR transactions operate on PTOnet using PCs on PTOnet	09/96	09/96	
Develop new Publication System	09/96	09/96	

Implement production of camera ready copy of TMOG and original and updated registration certificates	09/96	
Assess feasibility of using Standard Forms	09/96	
Assess feasibility of scanning paper input	09/96	
Scan application drawing page images in trademark work areas	09/96	
Begin on-line printing of application drawing page images in trademark work areas	09/96	
Deploy integrated PC based new application data entry and text editing system	09/95	03/97
Initiate on-line printing of file jacket labels and filing fee receipts in trademark work areas	09/97	
Migrate current TRAM BCR and CRT transaction processing to desktop PCs	09/97	
Begin external access to on-line TRAM query capability available at remote customer locations	09/97	
Deploy enhanced automated data validation edits	09/98	
Implement data base on a server	09/98	09/98

6.2.4 Trademark Search (X-Search) System

The first automated Trademark Search System (T-Search) was installed in 1984. At that time, the Trademark Office received 61,480 applications annually, less than half of what is currently received. The current search database contains approximately 1.5 million Trademark registrations and applications and over 500,000 images. The current search system (X-Search) is available to Trademark examining attorneys on PC's located in "bullpens", and to the public via PC's located in the Trademark Search Library.

X-Search Version 1.0, the first phase for the upgrade of T-Search, was implemented in July 1993. With Version 1.0, the Office migrated image file maintenance to a newly established file server, thus reducing image retrieval and display time from a range of four to 13 seconds per image to less than one second per image. The original Burroughs B22 PCs were replaced with industry standard state-of-the-art PCs, allowing a Windows (TM) based user interface to be introduced. The original Anadex dot matrix printers were replaced with laser printers.

6.2.4.1 X-Search Version 1.1

When implemented, this release of the X-Search System will increase the number of concurrent users 60 to 300 and provide minor functional improvements over the current

Version 1.0. The accomplishment of these goals requires the acquisition of a replacement for the Orbit (TM) text search software and hardware components, modification of the workstation interface software, and an upgrade of the Trademark Image File Server. The PTO is competitively acquiring the text search product to replace Orbit (TM).

a. Description. From the time of its implementation in FY1996 until the installation of the next generation of automated Trademark search system, X-Search 1.1 will provide the Office with automated access to the Trademark Search database. This system is the primary tool for Trademark Examining Attorneys to conduct searches. Following the installation, the system will be supported by modifications requested by the customer. These future modifications might include:

- Increases in functionality in response to changes in the operating environment;
- Modifications to accommodate continual process improvements;
- Enhancements to improve operational efficiency and customer satisfaction, or;
- The removal of defects or undesirable characteristics, as identified by the customer.

b. Justification. X-Search provides the necessary access mechanism to search the automated Trademark records. X-Search Version 1.1 will improve system performance characteristics while installing minor functional improvements. If this release of the system is not funded, then current performance will not improve, but degrade, as demands on system resources increase. There were generally three major categories of comments, in the Trademark Focus Group that will be directly addressed by this project:

- Improve X-Search system performance.
- Relocate X-Search access to the desktop (or home).
- Allow preempting a search in progress.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Issue RFP for Orbit replacement			05/94
Proposals due			08/94
Award contract for Orbit replacement	12/94		08/95
X-Search Version 1.1 ready for use	10/95	07/96	
Deploy automated international class assignment process	09/97		
Expand use in trademark search library	09/98		
Deploy automated pseudo mark creation process	09/98		

6.2.5 Trademark Work at Home (TWAH)

TWAH, also known as FlexiPlace, is a pilot effort to explore the concept of supporting Trademark work processes at remote locations (i.e., working from home), with an initial focus on examination processes. The TWAH pilot will support fifteen Trademark Examining Attorneys working at home. The life of the pilot effort is two years.

The goal of the project is to develop and implement computer software and telecommunications capability that will support a Trademark examiner working at a remote location. Capabilities will be assembled from currently existing TRAM and X-Search software, Commercial-Off-The-Shelf products, software that will be developed prior to implementation and software developed specifically in support of the project. The experience gained from this pilot will serve as a foundation for determining the feasibility of future work at home programs.

a. Description. When fully deployed, this system will supply a select group of participating Trademark Examining Attorneys with remote access to Automated Trademark Searching (X-Search), Retrieval of Administrative System (TRAM) data, creation of prosecution history updates, and office automation functions including word processing and electronic mail. The system will be implemented in two releases. The initial release (TWAH Version 1.0) will include access to the automated Trademark search system, office automation functions, and support for remote TRAM queries. The final release will incorporate TRAM update capabilities.

b. Justification. The Department of Commerce has selected the Trademark Office to be part of the Commerce Reinvention Lab. This project is to be Trademarks contribution to the Reinvention Lab.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Receive requirements	01/95	12/95	
Complete system design	09/95	04/96	
Complete development and testing	05/96	08/96	
User training and testing	09/96	09/96	
Implement TWAH 1.0	09/96	09/96	
Start pilot	09/96	09/96	
End pilot	09/98	09/98	

6.2.6 Madrid Protocol

The Office has participated in meetings relating to the development of regulations for implementing the Madrid Protocol, a treaty concerning the international registration of Trademarks which was adopted in Madrid, Spain, on June 27, 1989. The Protocol itself relates to the Madrid Agreement Concerning the International Registration of Marks of April 14, 1891, as revised at Stockholm on July 14, 1967, and amended on October 2, 1979.

The PTO, in conjunction with delegates from WIPO, the United Kingdom and Canada, defined procedures and formats to be used to exchange Madrid Protocol data electronically between WIPO and any member country of the Madrid Protocol. These standards cover both text and image data.

a. Description. If in the future voting issues are resolved, the United States will formally become a Contracting Party (member) of the Protocol by depositing the Instrument of Accession (required membership document) with the International Bureau (World Intellectual Property Organization - WIPO), and will be required to start processing Madrid Protocol transactions on the date specified in the document.

The Madrid Protocol System will support the following functions: accepting electronic as well as paper applications; publishing a revised version of the Trademark Official Gazette which includes Madrid Protocol information; exchanging electronic data with

WIPO (the Electronic Data Interchange File); modifying application processing and post-registration software; and creating an archive file of all data sent to and received from WIPO.

b. Justification. The USPTO wishes to maintain a liaison with WIPO in order to keep communication channels open and stay informed about Madrid requirements so they can be incorporated in the design for the Trademark Information System (TIS). This will facilitate the process of joining the Madrid Protocol at some time in the future.

c. Status. The United States will not become a member of the Madrid Protocol at this time because of the inter-governmental voting procedure contained in the Protocol. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Madrid Protocol project team formed	TBD	TBD	
Advice and consent forwarded to president	TBD	TBD	
Madrid Protocol implemented	TBD	TBD	

6.2.7 Trademark Information System (TIS)

The PTO currently uses a paper oriented process for processing Trademark applications. Applications are submitted in writing, with the PTO receiving the application in its Mail Room. Subsequent pre-processing includes: organizing the documents submitted; assigning a unique serial number; classifying the application; and routing the file to the appropriate examining law office. Trademark examining attorneys use the X-Search automated search system to determine if confusingly similar marks exist. If the Trademark is allowed to register pertinent information, extracted and forwarded to the Government Printing Office for production of the Trademark Official Gazette, and registration certificate.

A paper-oriented application process is inherently inefficient, error-prone, and labor intensive. The TIS System will supplement and eventually replace the paper applications and manual procedures with a system which will electronically process and maintain Trademark data (text and image).

a. Description. Objectives of TIS include reduced operations costs, improved quality through workload and process management, reduced pendency, international exchange of information to improve the protection of Trademark intellectual property,

improved access to PTO information by internal users and the public, improved management reporting capabilities, improved security, and improved efficiency of application management. The PTO plans to develop the TIS System using a combination of in-house and contractor staff. The PTO will use existing and planned PTO hardware and software components, consolidate TIS requirements into PTO-wide acquisitions of other components, and contract for the labor and other resources needed for system development and implementation.

b. Justification. If this work is not funded, the PTO will need to hire additional Trademark "pipeline" personnel. Additionally, it would adversely affect the PTO goals of maintaining pendency times, enhancing examination quality through workload and process management, and reducing Trademark pipeline costs.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
"To-Be" model created			07/94
Publish PTO color image scanning standard	09/96		
Publish trademark database models	09/97		
Deploy on-line retrieval of trademark OG images	09/97		
Deploy on-line retrieval of registration certificates and updated registration certificate images	09/97		
Deploy color image scanning software	09/97		
Deploy CD-ROM search product enhanced to include images as well as text	09/97		
Implement electronic filing of trademark documents	09/98		
Project team established	01/95	TBD	
Statement of need approved	04/95	TBD	
Concept phase completed	05/96	TBD	
TIS fully implemented	09/99	09/01	

6.2.8 Trademark Trial and Appeal Board Information System (TTABIS)

The Trademark Trial and Appeal Board is an administrative tribunal empowered to determine the right to register, and the subsequent validity of a trademark. The TTAB adjudicates the rights of parties in five types of proceedings: oppositions, cancellations,

interferences, concurrent use proceedings and appeals from refusals by the Office to register a mark. The TTABIS will support the long term goals of the PTO by significantly improving the operating efficiency of the TTAB. The agency objectives to be accomplished by the system include: develop data entry methodology to provide support staff with a flexible and user friendly system; improve quality of data captured; improve management's capability to generate necessary reports; process increased submissions without increased staff; improve data dissemination to the public; dramatically improve pendency; retrain the staff to work in a process driven environment, rather than a task oriented environment; give the staff a wider range of duties with greater authority over their jobs; allow the staff to generate and track work immediately on their computers and greatly improve customer satisfaction.

a. Description. The TTABIS system will result in a significant improvement over current TRAM processes. The strategic direction of TTABIS includes the expanded use of personal computers and laser printers so that all required processing can be performed on a desktop PC.

TTABIS will consist of four new software components with the acronyms, BISX, BISM, BISE and BISR. BISX will allow queries to be processed for TTAB information from personal computers. BISM will download TTAB data to a PC where it will be merged into a word processing package to create letters to be sent to the parties involved in adversary proceedings. BISE will be a PC based data entry and data correction process that will greatly reduce the effort required to enter and modify TTAB data. BISR will enable TTAB users to obtain various statistical and management reports.

b. Justification. In April 1994, the Deputy Commissioner for Patents and Trademarks requested that the Office of Business Process Reengineering analyze and redesign the processes performed within the TTAB because pendency problems identified an opportunity for improvement. This review included a critical analysis of the TRAM system and its ability to serve the TTAB's data management needs. This review identified numerous deficiencies including: difficult data entry; the inability to enter and record data from all devices; the inability to easily generate mailing labels or envelopes; and the inability to generate reports based on critical information, such as timeliness. Other problems included a reliance by the staff on a free form data entry code which resulted in incomplete status and location information and the inability to generate accurate reports. In addition, it was concluded that TTAB lacked sufficient TRAM devices to process the work in a timely manner. BIS will support the TTAB efforts to correct the areas of deficiency outlined above.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Implement BISX	05/95		05/95
Requirements finalized	12/95	12/95	
Implement BISE	06/96	04/96	
Implement BISM	06/96	02/96	
Implement BISR	08/96	08/96	

6.2.9 Trademark Law Treaty (TLT)

The PTO will be involved in legislation in the 104th Congress to amend the Lanham Act in order to implement the Trademark Law Treaty. On October 28, 1994, the United States signed the Trademark Law Treaty adopted at the Diplomatic Conference held in Geneva Switzerland on October 27, 1995. This treaty will greatly simplify the protection of trademarks and service marks by eliminating unnecessary formalities. The TLT will save time and expenses for applicants when they file an application for a trademark registration. The TLT further guarantees to applicants and owners of marks, the establishment of model international forms which must be accepted by trademark offices of countries who are party to the treaty.

a. Description. The TLT will provide the following benefits:

- All contracting parties must accept applications for the registration of service marks; service marks will thus have the same legal status as trademarks.

- It will no longer be necessary to legalize signatures.

- It will be possible to obtain the recording of changes in registrations belonging to the same owner e.g., changes of names, addresses or phone numbers, through a single request, even if they concern several registered marks (as is the case for large corporations). The same procedure will apply in cases of the transfer of a trademark from one company to another, e.g., in the context of a merger or a takeover.

- Trademark offices will not be allowed to require formalities for registration which are not expressly mentioned in the "maximum list" of the Treaty.

- Any application can be divided into two or more applications without losing the original filing dates. Registrations can also be divided.

- The duration of the initial period of the registration and the duration of each renewal period will be unified to ten years each.

b. Justification. The adoption of the TLT will have a positive economic impact in a global economic environment where trademarks are increasingly important. Major differences exist in trademark laws between the countries of the world. Harmonization of trademark laws through the TLT will benefit trademark applicants, owners, and national trademark offices. The use of standard forms and simplified application submission procedures will facilitate the establishment of electronic data interchange. The reengineering of examination and renewal processes thereby allowing more production to be accomplished with the use of less resources. The provisions of the TLT are consistent with the PTO's goal of streamlining operation and improving product quality.

c. Status. The United States will become a TLT contracting party when necessary legislation is enacted. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Treaty signed	10/95		10/95
Advice and Consent forwarded to President	TBD	TBD	
TLT Project Team Forwarded	TBD	TBD	
TLT Implemented	TBD	TBD	

6.3 Administrative Automated Information Systems (PT-96-05-N)

The PTO is involved in the development or enhancement of numerous systems for support offices throughout the PTO. A description of these systems follow.

6.3.1 Equal Employment Opportunity Monitoring and Analysis System (EEOMAS)

The EEOMAS generates work force analysis reports and tracks the progress of discrimination complaints as they move through the prescribed Equal Employment Opportunity Commission (EEOC) administrative process. EEOMAS is currently operational on a standalone microcomputer and on PTOnet server and receives baseline personnel from data downloaded from the National Finance Center. EEOMAS provides ad hoc query capabilities, a report generator, and over 400 pre-designed personnel-related reports including standard reports needed for submission to the Department of Commerce and EEOC. EEOMAS also has the capability to track applicant flow and produce adverse impact analysis.

Much of the system already exists in the stand alone version of EEOMAS 6.1. EEOMAS will provide the PTO customer with workforce analysis capability as well as up to date tracking of discrimination complaint activity. EEOMAS provides flexible access to EEO workforce data and discrimination complaint activity. Workforce analysis is currently performed by version 6.1 of EEOMAS located on server 07 with the standalone serving as a test and backup copy.

a. Description. EEOMAS enhancement activities include deploying a network version of the system that will provide pre-formatted reports to those who submit or review EEO matters, and development of security and access control mechanisms to safeguard the information in the database. Other activities include further customization of reports, development and deployment of software supplementary to EEOMAS, creation and validation of historical data files, upgrades to accommodate new EEOC-required report formats, and annual technical support services from the EEOMAS vendor. The network version of EEOMAS is currently being utilized by (CIO) systems engineering division to test database encryption products.

The network EEOMAS project should provide EEO information for at least three years. The underlying database is based on a compiled version of a commercial-off-the-shelf (COTS) database product (FOXPRO).

b. Justification. Provides management with timely EEO data and status reports. The EEOMAS network project. It will provide more timely information to the Office of Civil Rights with regard to data needed for annual reporting in workforce analysis and complaints investigation.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Further network adaptation and file structure	03/95	08/95	
Encryption project	TBD	09/95	

6.3.2 Commerce Administration Management System (CAMS)

The Commerce Administration Management System (CAMS) will be an integrated system composed of a CORE Financial System together with other functionality provided by various interfaced systems. CAMS will be piloted by several Commerce bureaus and begin implementation at the PTO in early 1996.

a. Description. The Commerce Administration Management System (CAMS) project is evaluating various alternative systems to replace the core Department of Commerce financial systems. This effort addresses procurement, property, personnel, budget, grants, and travel.

b. Justification. Mandated by Department of Commerce.

c. Status. Project will begin 4/1/96.

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Plan and organize project	04/96	04/97	
Integrate CAMS components	10/96	10/97	
Prepare technology to support CAMS	04/97	04/98	
Transition to CAMS	10/97	10/98	

6.3.3 Enhanced Cost and Fee Management System

Currently, the PTO does not collect and analyze, on an agency-wide basis, the costs associated with each process and service provided to internal and external customers. The Cost and Fee Management System will facilitate the matching of actual costs to

revenue streams, identify and allocate direct and indirect costs, and perform other fee and cost analysis.

a. Description. The Federal Financial System (FFS) Cost Allocation Module will be used to execute cost accounting allocations. Activities involved in deploying this module include definition and analysis of project codes to be used throughout the PTO, identification of collection processes and impacts on existing AISs, implementation of system changes, preparation of FFS to accept and perform cost collection and allocation, training of employees to use new codes and procedures, and implementation of revised project codes.

b. Justification. This enhanced system will provide better management and control of costs against revenue streams, enabling more effective decision making and better accountability of FTE costs against actual revenue generation processes.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Perform analysis of project codes	09/95		09/95
Define bureau-wide definition of cost and fee codes	09/95		10/95
Identify collection processes and impact on related systems	09/95	03/96	
Identify cost objectives and direct/indirect costs	07/96		
Determine allocation process and algorithm	08/96		
Execute and test system changes	09/96	09/96	
Training requirements	09/96	09/96	
Identify reference materials for distribution	09/96		
Implement revised processes	09/96	10/96	

6.3.4 Executive Information System (EIS)

The Executive Information System (EIS) will deliver an automated, multi-dimensional blend of corporate-wide information that PTO decision makers require.

Efforts to automate vital operational information (i.e., key indicators) to date have varied widely across the PTO. No single, easily accessible data repository exists at the PTO for capturing and retrieving comprehensive organizational information. For example,

internal data concerning finance, human resources, diversity, production, workload, contracts, and international operations exist in different forms and types of databases, such as:

- Spreadsheets that are updated manually (e.g., international patent data and selected global economic data);
- Mainframe computer non-relational databases (e.g., PALM and TRAM for patent and trademark data);
- Paper files (e.g., historical Process Production and Staffing Reports);
- Relational databases (e.g., Procurement Desktop for contract data and EEOMAS for diversity); and
- Remote databases accessed through electronic communications (e.g., the Federal Financial System (FFS) and the National Finance Center (NFC) for human resources data).

The EIS will enable executive, managerial, and analytical evaluation of PTO's critical operational information via electronic means. In so doing, EIS customers will have a more comprehensive view of key indicators, a window to external information, as well as access to user-friendly, interactive, dynamic presentations delivered at their desktop workstations. By providing drill-down capabilities (i.e., global to specific access to data), consolidated, on-line access to many types of organizational information, and automatic exception reporting, the EIS can contribute significantly to assisting top management in strategic and tactical planning and decision making. Additionally, development of the EIS will promote improvement of data collection methods throughout the PTO.

The proposed EIS will require multi-year development and on-going operating and support funding.

a. Description. The Executive Information System (EIS) will consist of two tiers. The upper level will consist of an Executive Information System (EIS) displaying graphical prestructured dataviews with drill-down capability and exception reporting. This level will generally be used by PTO executives. The second level will consist of a reporting environment offering on-line reports, report construction tools, the capability to perform multidimensional queries, and information providing applications of several types. The second tier will generally be used by PTO managers. The FFS End-User Reporting Facility will provide a database to stage data collected from various operational systems. The staging database will operate as a "corporate database" and will

automatically feed the two levels of the overall EIS. The database will also allow detailed transaction-based inquiries.

b. Justification. This project directly supports the mission of the PTO by initiating the creation of a centralized repository for key indicators linked to the strategic planning process. Moreover, the eventual full deployment of this system will enable timely, easy access to a broad array of information vital for sound, proactive management of the PTO.

If this project is not completed, top decision makers, managers, and analysts will continue to lack efficient, timely access to PTO-wide information. Unnecessary costs and time delays associated with manual collection and analysis of data are almost certain. Redundancy of effort, inadvertently overlooking critical information, and the potential for error abound in the current reporting process. Delaying this project could result in missed opportunities, costly mistakes, and managerial decisions based on inaccurate or incomplete information. The EIS project is seen as the fulcrum of efforts aimed at making greater strategic use of information.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Evaluate Tier I and Tier II software	12/94		12/94
Select final three	01/95		01/95
Perform demos at PTO	02/95		02/95
Perform site visits	03/95		03/95
Make selection	06/95		06/95
Acquire Tier I and Tier II software	07/95		12/95
Acquire contractors	07/95		09/95
Upgrade Sequent computer	08/95		09/95
Form Implementation Team	08/95		09/95
Train Implementation Team	08/95		10/95
Select Tier I Customer Group	07/95	01/96	
Define Tier I Requirements	08/95	01/96	
Conduct Tier I RAD	10/95	02/96	
Accept Tier I	12/95	04/96	

Select Tier II Customer Group	07/95	03/96
Define Tier II Requirements	08/95	04/96
Conduct Tier II RAD	10/95	05/96
Accept Tier II RAD	12/95	07/96
Develop Plan and Schedule for Interfaces	08/95	02/96
Design, Develop, Test Interfaces	11/95	03/96

6.3.5 FFS End-User Reporting Facility

The PTO has a requirement to meet the reporting needs of FFS users as well as executives, mid-level managers, and other data users. Relational databases have generally provided slow response times to multidimensional queries of large databases. The PTO therefore plans to acquire a data warehouse to aggregate and manipulate large amounts of financial and other types of data for presentation. Operational systems such as FFS and NFC will provide the data to populate the data warehouse.

a. Description. During the course of this project an appropriately tuned database will be developed to support detailed transaction level inquiries and reporting. The database will contain selected data elements which can be used with third party tools to produce ad-hoc and canned reports. The database will also provide data to the EIS system. Although the database will initially consist of financial data, it will next be expanded to include other data such as personnel data.

b. Justification. PTO executives, managers and other financial data users want ready access to data for analysis and reporting purposes.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Establish a working group	06/95		06/95
Define requirements	07/95	01/96	
Define data needed to meet requirements	09/95	01/96	
Review available products	01/95	02/96	
Develop System Design	02/95	03/96	
Acquire needed hardware and software	02/95	02/96	
Develop Database	05/95	07/96	

6.3.6 Financial & Personnel Information Retrieval System (FPIRS)

Human Resource Offices throughout Department of Commerce have undertaken comprehensive automation initiatives to revolutionize the traditional business practices associated with the time-and-paper-intensive operational activity performed within personnel offices. One of the initiatives is to empower employees and managers. The PTO's HR office is intent on providing timely personnel information to managers as one of the ways to support this effort. FPIRS is a Windows-based reporting system that gives managers personnel and financial information at their fingertips and provides the manager the ability to manipulate this data in the Windows environment. The major purpose of this system is to assist PTO managers with their planning processes.

a. Description. FPIRS is an automated reporting system designed to provide PTO managers access to personnel, payroll and financial data. This system will be deployed throughout the PTO program offices to assist managers with planning personnel and budget resources for their offices.

b. Justification. FPIRS will reduce HR administrative costs by allowing PTO managers to run their own HR reports and provides significant improvement in the availability of information to management.

c. Status. We are currently piloting FPIRS in OHR and are scheduled to implement the product in Patents and OTC by late July. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Pilot testing in OHR	07/95		07/95
Patents	09/95	TBD	
ACTO	10/95	TBD	

6.3.7 Human Resources Data System (HRDS)

Through the United States Department of Agriculture's National Finance Center Payroll/Personnel System, the PTO has amassed a wealth of data about its employees. However, inherent deficiencies with the NFC system include difficulty in using the data, and in defining restricted access and data.

To translate this data into strategic information, and to provide this information to managers and those with financial management responsibilities, the Department of Commerce (DoC) has developed a system to enable desktop microcomputer access to employee information. This system is the Human Resources Data System (HRDS).

This is a DoC initiative and the PTO is funding a portion of the project.

a. Description. HRDS is an on-line information system that allows rapid access to a variety of personnel data in easy-to-understand terms. Personnel/payroll information is electronically downloaded biweekly from the National Finance Center to a DoC database. HRDS provides pre-programmed reports on payroll, time and attendance, leave, employer benefit costs, and accounting data. HRDS also provides aggregate reports providing average grade, average salary, number of employees in grades 14 and above, numbers of retirement eligible, and numbers of employees covered by bargaining units.

b. Justification. HRDS provides rapid access to personnel/payroll information thus increasing productivity and improving access to management information.

c. Status. Since the system is maintained and enhanced by the DoC, activity and product milestones are not relevant to this project. However PTO expansion to managers PTO-wide is dependent on the installation of a HRDS gateway (approximate date: October 1995).

6.3.8 Electronic System for Personnel (ESP)

The Department of Commerce has undertaken a comprehensive automation initiative to revolutionize the traditional business practices associated with the time-and-paper-intensive operational activity within a personnel office. The intent is to virtually eliminate the paper documents associated with traditional personnel management systems. The ultimate system will automate the entire process, starting with the initiation of an SF-52 (Request for Personnel Action) until the final processing of the action in the Payroll/Personnel system.

This is a DoC initiative. The PTO is participating in the pilot.

a. Description. The Electronic System for Personnel (ESP) from the Department of the Navy provides an SF-52 personnel transaction processing system. Deployed throughout the PTO, ESP will electronically generate the form SF-52; certify that all fields on the form are filled out; transmit the form to the next identified stop; track the

locations of all SF-52s in the system; generate Vacancy Announcements; prepare status reports; and generate certificates of eligibility.

b. Justification. ESP will reduce administrative costs by automating manual processes and will provide significant improvement in the availability of information to management.

c. Status. We are currently piloting the project in Trademark's, OHR, and the Director's office CIO. The initial evaluation period was set for September 1994 through November 1994. Transmission difficulties to NFC remain unresolved. DoC is expanding the pilot to NOAA where their Banyan LAN has successfully transmitted data. DoC will test another Windows-LAN environment to determine possible reasons for PTO transmission difficulties.

	Completion Dates		
	Initial	Current	
Tasks/Products	Projection	Projection	Actual
Begin pilot test	TBD		

6.3.9 Revenue Accounting and Management (RAM) System

The Cash Receipts/Deposit Account System (CRDA) operates on PTO's UNISYS mainframe. CRDA captures all funds-related transactions and provides FFS with revenue information. CRDA creates a daily report which is journalized and entered into FFS. Developed in 1980, CRDA no longer conforms to Federal requirements for automated financial management systems. The Revenue Accounting and Management (RAM) system will replace the inadequate CRDA system.

a. Description. The Revenue Accounting and Management (RAM) system is being developed to support the processing of receipts and deposit account transactions in the Receipt Accounting Division of the Office of Finance. The purpose of RAM is to record accurately the revenue receipts (cash, credit cards, and checks) that accompany applications and purchase of copies, and deposit account activity (deposits and refunds). Replacing the existing Cash Receipts, Deposit Accounts (CRDA) system, RAM will process fee accounting transactions and will update the primary financial system (FFS) on a daily basis. The RAM system will provide features to enhance the security, accuracy and productivity of the revenue accounting process. The system will also provide features to allow the Receipt Accounting Division to quickly respond to customer inquires about fees processed and deposit account activity. When scheduled production processing begins in January 1996, RAM will consist of 40 data entry workstations

connected to the RAM server via PTOnet. RAM will provide control mechanisms to support various levels of access for users located throughout the PTO.

Efforts to enhance the baseline RAM system will continue through FY1999. Planned enhancements include adding support for fee collection using electronic data interchange (EDI) mechanisms between PTO and external financial institutions as well as developing a standard interface to support tight integration between other PTO systems such as OEMS, PALM, TRAM and PTCS. The use of EDI will allow fees to be collected from external financial institutions and processed quickly and accurately and will reduce clerical expense. EDI will also expedite the processing of applications by allowing customers to electronically remit fees necessary to process patent and trademark applications. A standard interface to support other PTO systems will allow a high level of interaction between the fee collection process and other processes within the PTO.

b. Justification. The RAM system will be responsible for the processing of virtually all of the revenue which is collected by the PTO. An evaluation of the PTO's system of internal accounting and administrative control performed in accordance with the Federal Managers' Financial Integrity Act of 1992 (Public Law 97-255) which included a review of the current system cited the following: "Cash Receipts/Deposit Accounts System Violates Financial Information Standards For Accuracy and Timeliness."

The lack of adequate internal controls in the CRDA system makes it very difficult to distribute any fee processing activities outside of the Receipt Accounting Division and to integrate other PTO systems requiring access to the revenue system. The current system also lacks controls to detect errors in deposit account processing and permits duplicate payment conditions to occur. The limited capabilities and lack of information stored in the system also makes it difficult to provide timely responses to customer inquires.

If the RAM system is not funded, CRDA could still be used for the processing of receipts and deposit accounts. However, the inefficient and often inaccurate fee processing activities will continue, and the system would remain in violation of government financial information standards.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Complete detailed design		04/96	
Complete development of RAM 1.0	07/95	09/96	
Begin deployment of RAM 1.0	09/96	09/96	
Complete deployment of RAM 1.0	09/97		
Evaluate operational system	09/97		
Develop RAM version 1.1 with enhancements to pilot EDI for maintenance fee payments	09/97		
Develop RAM 2.0 with standard interface for integrating fee processing with other PTO systems	09/98		
Begin integration of fee processing with select PTO systems	09/99		
Continue integration with select PTO systems	09/00-09/01		

6.3.10 Time and Attendance

a. Description. Through DoC and PTO working groups, OHR and the Office of Finance is making an attempt to improve the T&A process. OHR will develop a functional document to identify the customer concerns about the inadequacies of the T&A program. In conjunction with DoC's working group, the NPR output, and the Associate Commissioner Center for Quality Services, OHR will consolidate the recommended solutions and determine the best plan of action.

b. Justification. The National Performance Review (NPR) described the T&A program as cumbersome and inflexible. To meet the NPR initiative, OHR T&A staff are conducting research of various vendor's T&A software.

c. Status. OHR system staff have automated our timecard and we will begin piloting this form throughout OHR during pay period 10. Contact has been made with KRONOS and system staff have received a demonstration of this vendor's DOS-based time and attendance software. The vendor claims that a Windows-based version will be available in the late summer.

6.3.11 MAP System - Merit Assignment Program System

Human Resource Offices throughout the Department of Commerce have undertaken comprehensive automation initiatives to revolutionize the traditional business practices associated with the time-and-paper-intensive operational activity performed within the office. The intent is to virtually eliminate the paper documents associated with traditional personnel management systems. To support this effort, PTO's HR office is designing the MAP system to assist OHR specialists and managers in tracking information on job applicants and to automate segments of the process.

a. Description. MAP will provide HR specialists an automated mechanism to track employment applicants. The system is designed to track both PTO and outside candidates, produce certificates of eligible candidates, applicant letters, provide data on HR applicant statistics and supply historical information on PTO employment candidates. This system has the potential to be utilized Commerce-wide for MAP cases and is intended to support down sizing initiatives throughout DoC.

b. Justification. MAP will reduce HR administrative costs by decreasing paperwork typically associated with this process and simplifying MAP reporting processes and provides significant improvement in the availability of information to management.

c. Status. Activity and product milestones are:

	Completion Dates		
	Initial	Current	
Tasks/Products	Projection	Projection	Actual
Development/Design			06/95
Testing			06/95
Initial Pilot	01/96		

6.3.12 Employee Express (EE)

a. Description. The purpose of the EE system is to give employees the option to directly enter certain personal information. Examples of the type of information that employees would have the ability to change are; address changes, TSP and health benefit information, W-4 forms and allotment information. EE is designed to assist employees in making direct changes to their personal information.

b. Justification. This system will assist in streamlining OHR administrative and data entry responsibilities.

c. Status. The PTO was one of the pilot sites initially considered by DoC, however, recently Commerce has withdrawn PTO as a pilot site prospect. This project is on hold until January 1, 1996, due to problems with Georgia maintenance.

6.3.13 Automated Delegated Examining Unit - OPM's Microcomputer Assisted Rating System (MARS)

a. Description. The MARS system has been developed to provide an automated system that will support the staffing process within the PTO. The system will automate external recruitment and the Merit Assignment process by identifying eligible candidates for every competed job opportunity within the PTO. The system will consist of Patent Examiner, Merit Assignment Program and candidate evaluation modules.

b. Justification. This system will assist in streamlining OHR administrative and data entry responsibilities.

c. Status. After several initial system and technical problems, this OPM-driven project is continuing. System problems include phone line problems, mark-sense form reader problems and inconsistent system support. Technical problems include applicant customer and manager participation. Currently, OHR has over 500 records implemented to this database. Many system and technical problems are being resolved, however OHR C&E staff are continuing the resolution process.

6.3.14 Scanned OPFs/OHR Files

a. Description. OHR is currently performing research with various vendors who provide scanner services to discover the best possible method to store OPF's and OHR files electronically. The best method would provide access to managers and employees via PTOnet. Several issues concerning unions, regulations and transfers to other agencies must be addressed before full development of this system.

b. Justification. This system will assist in streamlining OHR administrative and data entry responsibilities.

c. Status. OHR is currently researching this product at this time and the project is in concept stage. Projected start date of final phase of the project is mid 1996 (software/hardware purchases/integration, scanning, etc.). Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Establish concept/working group			05/95
Research OHR Requirements	07/95		
Research Protocols	07/95		
Research Hardware/Software	09/95		

6.3.15 Awards Database and NFC Upload Facility

a. Description. The purpose of this system is to simplify the process of calculating award amounts, submitting award sheets to OHR and performing the necessary data entry to the National Finance Center (NFC) database. The system is designed to facilitate the entire cash performance award process. Managers will receive a listing of their employees, have the ability to enter the individuals rating and the database will compute the award amount. The manager will then return their part of the database to OHR. This information will be compiled into one database for transmission to NFC.

b. Justification. This system will assist in streamlining OHR administrative and data entry responsibilities.

c. Status. OHR is currently researching this product and the project is still in the concept stage. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Development Design			08/95
Testing NFC Transmission	08/95		
Initial Pilot	09/95		

6.3.16 FRC-CALC

a. Description. The purpose of this system is to allow employees via the network to compute their own retirement information. The computed information may include data such as: amount of retirement annuity received for a specific retirement date; age and length of service; and retirement percent information. OHR currently has copies

of the standalone product loaded on individual PCs and will implement a network version.

b. Justification. This system will assist in streamlining OHR administrative and data entry responsibilities.

c. Status. OHR is currently researching this product and the project is still in the concept stage.

6.3.17 OHR Information CD-ROM

a. Description. This system will be a full multimedia production that will allow those unfamiliar with the functions of the Office of Human Resources to discover what the office does and who to contact and how. This CD-ROM will allow the customer to search through the OHR services to find out what they need to do (a kind of on-line help desk). This will be accomplished through full motion video, sound and graphic interfaces, giving a modern image to our HR customers and an up-to-date information resource. This CD may also be developed as a link to the Employee Express System.

b. Justification. This system will assist in streamlining OHR administrative and customer service responsibilities and at the same time increase the amount of customers that can be assisted at one time by the OHR Staff.

c. Status. OHR is currently researching this product and the project is still in the concept stage. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Establish Working Group			05/95
Outline Project parameters	TBD		
Begin Project	TBD		

6.3.18 Registrar

Recently the Department of Commerce (DoC), Office of Human Resources determined to eliminate NFC's TRAI database and replace its use with Registrar. Registrar is a PC-based training administration software. Through the use of Registrar, the Workforce Effectiveness Division (WED) can process registrations, update student records and

generate correspondence and produce reports in a fraction of the time now required to just enter training information on one employee.

a. Description. Registrar helps manage the administration for a variety of training events. These include in-house seminars and workshops, self-paced training, classes offered by third parties, certification training and other training and development activities. Registrar also allows a user to:

- Process registrations
- Track employees and track their status instantly
- Update student records automatically
- Customize reports
- Track every dollar spent on training
- Create letters, labels and certificates with 'mail merge' speed

b. Justification. DoC has determined to eliminate TRAI and required the agencies to use Registrar. This system will assist in streamlining OHR administrative and customer service responsibilities and at the same time increase the amount of customers that can be assisted at one time by the OHR staff.

c. Status. Phase I. The Windows version will be released in September, 1995. Systems and Special Projects (SSP) has contacted ACTO informing them that we would like to load Registrar on the Network. All WED employees will have access. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Phase I WED access	09/95		
Phase II PTO University and Patent Academy	07/96		
Phase III All employees	09/96		

6.3.19 Quality Informant

The Quality Informant (QI) is a database that was created for quality-related issues and, when completed, will be accessible by everyone on PTOnet. Some of the data that will be in the QI is PTO teams, survey efforts, bench marking efforts, contents of the resource libraries and workforce effectiveness training courses.

a. Description. The application provides a graphical, user-friendly customer database which contains the latest information on PTO quality activities, interface to the PTO quality database. The PTO quality database is a Paradox Specifically, QI permits users to access information on bench marking, quality briefings, customer contacts/focus sessions, customer and employee surveys, quality of work life projects, and quality teams.

b. Justification. This application will provide access to budgets and performance ratings which tie to quality measures in a single automated system.

c. Status. The database became operational, on a limited basis, in April 1995. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Development of team prototype			10/94
Prototype demonstration to Partnership Council			01/95
Development of full prototype	TBD		
Prototype implementation	TBD		
Implementation	TBD		
Integration with EIS, if adopted	TBD		

6.3.20 PTO-1464

The automation of the PTO-1464 will enable PTO employees to request any one of the numerous services that the Office of Administrative Services (OAS) provides (e.g., telecommunications; renovations; disposal and acquisition of property; moving services, etc.).

a. Description. The system will be accessible on PTOnet and available to all employees throughout the PTO. Automating the PTO-1464 will streamline the current

processes and enable PTO employees to be more aware of the services available to them from OAS.

The current form (PTO-1464) does not identify any of the OAS services. The system will clearly identify each of the services that OAS provides. The current form does not request specific information from the Requester, and often the Requester does not submit enough information for their request to be completed in a timely fashion. The system will prompt the Requester for specific information pertaining to each of the services (e.g., the telephone number where there is a problem, the to and from location of a move, etc.).

The system will have the capability to track a request from origination by the customer through completion by the specialist/analyst; and produce tracking/status reports upon request.

The automation of the internal form has been broken down into five phases:

- Phase 1: Space and Facilities Management Division - Telephone Repair
- Phase 2: Space and Facilities Management Division - all other services (e.g., telecommunications, renovations, etc.)
- Phase 3: Office Services Division - Records and Property (e.g., packing/moving boxes; disposal and acquisition of property, etc.)
- Phase 4: Office Services Division - Support Services (e.g., moving services, locksmith services, etc.)
- Phase 5: Other OAS areas (e.g., courier services, parking, building services, etc.)

b. Justification. The new system will automate and streamline the current manual processes; and productivity will increase amongst users. The system will have the capability to track a request from origination by the customer through completion by the specialist/analyst. The system will be able to generate tracking/status reports. The system will be accessible through PTOnet.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Phase 1. Space and Facilities Management Division - Telephone Repair			
Coordination with Information Systems on the acquisition of the "software" to be programmed and placed on PTOnet	09/95		
Installation of "software" onto PTOnet	11/95		
Design of form and set-up database for Telephone Repair	01/96		
Test system	02/96		
Develop training material	02/96		
Inform and train customers	04/96		
Form available for use by customers	04/96		
Phase 2. Space and Facilities Management Division - all other services (e.g., telecommunications, renovations, etc.)			
Design of form and set-up database for Telecommunications and Renovations	05/96		
Test system	06/96		
Develop training material	06/96		
Inform and train customers	07/96		
Form available for use by customers	07/96		
Phase 3. Office Services Division - Records and Property (e.g., packing/moving boxes; disposal and acquisition of property, etc.)			
Design of form and set-up database for Telecommunications and Renovations	05/96		
Test system	06/96		
Develop training material	06/96		
Inform and train customers	07/96		
Form available for use by customers	07/96		

Phase 4. Office Services Division - Support Services (e.g., moving services, locksmith services, etc.)

Design of form and set-up database for Telecommunications and Renovations	05/96
Test system	06/96
Develop training material	06/96
Inform and train customers	07/96
Form available for use by customers	07/96

Phase 5. Other OAS areas (e.g., courier services, parking, building services, etc.)

Design of form and set-up database for Telecommunications and Renovations	07/96
Test system	08/96
Develop training material	08/96
Inform and train customers	10/96
Form available for use by customers	10/96

6.3.21 ELFS

The Employee Locator and Finder System (ELFS) will enable PTO employees to view and query information on-line pertaining to all PTO employees' (e.g., their location-building and room, phone number, etc.). The system will also enable users to view organizational information on-line.

a. Description. The system will be accessible on PTOnet and available to all employees throughout PTO. The data currently within PALM will be transferred to the system on PTOnet. It is envisioned that the current ELFS will be expanded to reflect more pertinent information for PTO employees (e.g., organizational listings, informational listings, etc.).

The overall coordination of the system will remain with the Office of Administrative Services (OAS); with the responsibility of maintaining the system at the lowest practical level - the program office.

b. Justification. By placing this system on PTOnet it will be more accessible for PTO employees. The system will continue to be utilized by many program offices throughout the PTO to provide timely and accurate data on the telephone number and location of all employees. Specifically, the Public Service Branch will use this system to

respond to telephone inquiries and the Mail Room will use this system to locate individuals in order to route misdirected mail appropriately.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Survey A/C Coordinators and Program Representatives	12/95		
Analyze and compile surveys	01/96		
Define system requirements	01/96		
Design and development	03/96		
Conversion of existing data	05/96		
Test system	06/96		
Develop training material	06/96		
Inform and train users	09/96		
System on-line	09/96		

6.3.22 MAG CARD

A variety of magnetic strip card systems are being used at the PTO with several other applications considering their use. In addition, several identification cards are being used at the PTO for employees, search room users, contractors, etc. In order to control cost and prevent a proliferation of these cards, a standard system needs to be developed and installed.

a. Description. The Magnetic Strip Identification Card System (MAG CARD) will provide increased security and reduce costs by developing an ID card system. It will be used for several functions such as:

- DoC security picture id cards.
- Picture ID cards for regular PTO customers in the Search Room.
- Foreign copy sales cards and copishare cards.

These systems can be used in the future for such programs as:

- Access to ATM machine for monthly fare cards and travelers' checks.

- Access to buildings and elevators.
- Automated sign-in and sign-out for automated time and attendance.

b. Justification. This application will combine several cards/ids into a single system.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Survey customers	04/95		
Define requirements	07/95		
Test and implement system	10/95		
Train end-users	01/97		

6.3.23 Imaging for Notes (Electronic Document Management System)

In today's information rich environment, where a greater variety of documents (paper, e-mail, Fax, electronic files) are being generated, traditional manual workflow procedures and paper file systems are proving to be insufficient when coping with limited time, limited support staff, and larger volumes of documents. Inherent problems associated with manual workflow and high-volume paper file systems, (e.g., periodic delays while document(s) are routed along required processing paths, lost or misdirected documents, space requirements for storage, file integrity degradation and increased time spent searching through an ever-expanding volume of material) negatively impact the efficiency and effectiveness of operations within PTO organizations. The Imaging for Notes Electronic Document Management System (EDMS) incorporates technological advances in electronic imaging, optical character recognition (OCR), full-text indexing/retrieval, and automated workflow design to make document processing easier, more efficient, and virtually paperless.

a. Description. Initially, this system will be deployed to the Assistant Commissioner for Patents area and within the Search and Information Resources Administration's (SIRA) International Liaison Staff for proof-of-concept. It will enable these areas to utilize an automated workflow design to more efficiently process, manage, and control documents. The EDMS will also improve file integrity, document availability, and offer greater accessibility through computer-assisted search techniques.

The system will facilitate the transfer of information enterprise-wide via the electronic mail service already available on PTOnet. Once the system is proven operational within the pilot organizations, it will be deployed to all offices within the A/C for Patents area, to specific supervisory personnel in the Patents Cost Center, and to certain sub-units within SIRA. Future enterprise-wide deployment is feasible.

b. Justification. This work responds to two similar requests for an electronic system to help manage the storage and retrieval of documents; one from the Deputy A/C for Patents to the Search and Information Resources Administration (SIRA) and the other from the Director of SIRA's International Liaison Staff.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Conduct feasibility study and establish requirements			08/93
Product comparison demonstrations			10/93
Alternative system comparative analysis system selection			11/93
Approval to initiate system development and procurement			11/93
Begin procurement process			01/94
Complete receipt of system components			12/94
Begin installation and test network servers and production station			02/95
Live demonstration of system operating on PTOnet	03/95		
Complete deployment to initial clients and test system reliability	05/95		
Second phase deployment to additional supervisors	08/95		
Review updated requirements and system capabilities	10/95		
Third phase deployment to remaining SIRA organizations	01/96		
Evaluate future expansion to enterprise-wide service	05/96		

6.3.24 Executive Document Management System

The Assistant Secretary of Commerce and Commissioner of Patents and Trademarks receives, and must respond to, a wide range of official correspondence. Similarly, other executive and administrative staff at the PTO must track administrative correspondence. A variety of manual document management and control processes have evolved over the years. The current document processes fail to take full advantage of personal computer-based tools; rely too heavily on outmoded and error-prone paper-based processes; result in wasted and duplicative efforts; and do not well-serve either the PTO's executives or their staffs.

a. Description. In FY1995, a Business Process Improvement project was initiated to address all controlled correspondence processing activities performed in the offices of the Commissioner, Deputy Commissioner, Associate Commissioner, Assistant Commissioners, and the CIO. Objectives of this project include: simplification and streamlining of document review, correction and approval processes; standardization of forms and formats for a wide range of commonly produced documents such as memoranda, letters, decision papers, etc.; improve the use of automated tools to schedule, manage, and monitor the flow of information and documents among the staff. To date, this Business Process Improvement project has produced an analysis of the current environment (i.e., an "as-is" model) and an analysis of a target design (a "To-Be" model). This project describes automation development activities which can improve the management of executive correspondence.

b. Justification. The goal of this project is to apply the technology used for the general Document Management System (project 5.1.5) to the particular requirements of executive document management. The project would support a phased process of pilot testing and implementation of improved manual and automated correspondence management processes.

c. Status. In FY1996, it is envisioned that there would be a limited pilot test involving key administrative staff in the Offices of the Commissioner, Deputy Commissioner, Associate Commissioner, Assistant Commissioner, and the CIO. Some minor improvements in automation support, such as the use of standardized document templates, would also be initiated during this phase. It is envisioned that these improvements could be realized for other types of correspondence.

While this pilot is in progress, PTO automation organizations will begin analysis and development of automated solutions that would implement the target business process design. This target business process, supported with automation, would be pilot tested in the executive staff environment. If this test proves successful, similar capabilities will be

implemented throughout the PTO. The budget estimates are based on the assumption that as many as 20 users could be added each year.

6.3.25 Operations and Budget (OPBUDGET)

The Office of Patent Programs Control (OPPC) operates and maintains the OPBUDGET system to prepare operational plans (models) and to estimate, monitor and track budget data for the Patent Examination Corps and the supporting patent processing organizations. The OPBUDGET system resides on a PTOnet server with access to four simultaneous users over PTOnet. The system is written in BASIC using the dBase IV DBMS. The system was originally written in 1978 but has not kept up with evolving technologies at the PTO.

a. Description. The OPBUDGET system is used by OPPC to prepare operational plans and the budget for Patent organizations. It is a model-driven budget system which includes projections of revenue and expenditures. OPBUDGET consolidates operational plans (Corps and other models) with model-driven budget estimates. The budget projections are compared against actual data and adjusted as required. The Director, OPPC would like to modernize the system to make it easier to maintain, accessible to a wider range of users over PTOnet and to be fully integrated into the current automated PTO environment.

b. Justification. The OPBUDGET system will be developed following the Life Cycle Management (LCM) standards methodology using a current, easily maintained and supported language and relational DBMS. The new system will be easily accessible by a wider number of users at the PTO over PTOnet. The new system will be able to access other databases at the PTO such as PALM, CRDA/RAM and T&A, and databases outside the PTO, such as FFS and Personnel.

c. Status. A prototype using PARADOX has been developed as a pilot project. The Director, OPPC has requested the CIO begin redevelopment of OPBUDGET starting in June 1995. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Complete Requirements	09/96		
Complete Design/Architecture	09/96		
Complete Development	09/97		

Complete Deployment Phase	09/97
Maintenance and Enhancement	09/97-09/02

6.3.26 Patent and Trademark Assignment System (PTAS)

The Patent and Trademark Assignment System (PTAS) project was initiated in 1992. PTAS supports processing of assignment documents through image capture, OCR text capture, automated workflow processing and generation of computer output microfilm (COM) of recorded documents from scanned images. PTAS was designed as a client server system that interfaces with the UNISYS A16 mainframe computer and servers. Work-in-process text and image data for new assignments submitted for recordation and documents submitted for correction are stored on the PTAS server data bases until recordation. When deemed recordable, text data is transmitted to the A16 mainframe for permanent storage and image data is archived to microfilm and magnetic tape.

a. Description. Dynamic Resources Inc. (DRI) was awarded the contract to design and develop the PTAS on September 29, 1993. The system was designed using Commercial-Off-The-Shelf (COTS) software for image and workflow processing. PC workstations were acquired and the contractor was responsible for acquiring the other hardware and commercially available software required for system implementation. PTO personnel now maintain the system. Planned major enhancements include PGPub modifications and the capability to process electronically submitted data.

b. Justification. PTAS will improve the timelines and accuracy of assignment processes, improve operating efficiency and the quality of assignment records.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
PTAS Concept Completed			07/93
Contract Awarded			09/93
Design Completed			06/94
Software Development Completed	11/94		02/95
Acceptance Testing Completed	03/95		04/95
PTAS Operational	04/95		05/95
PGPub enhancements implemented	01/96		
Electronic Submission Implemented	TBD		

6.3.27 Human Resources Information Management System (HRIM)

Like many organizations facing global economic and technological challenges in the 1900s, the Patent and Trademark Office has recognized the importance of scrutinizing its current business processes to find opportunities to improve productivity and effectiveness while lowering costs. The Patent organizations and Trademark organizations have undergone comprehensive scrutiny and have identified major changes. To effectively support the extensive changes proposed by these organization's, it is necessary for the Office of Human Resources (OHR) to review its business processes. To successfully implement out the Commissioner's vision, it is necessary to reengineer the business processes of the Office of Human Resources by redesigning all aspects of its management, operations, culture, and organizational structure to meet the challenges of the 21st Century.

The Office of Human Resources has been undergoing FTE cutbacks while the work load has been increasing. Many of the OHR professionals have become mired in the operational processes which has diverted the focus of providing advisory and consulting services. In addition, most of the OHR current information processing function is based on process-bound procedures and paper-intensive work flows. This is compounded by incompatible and antiquated information systems. All these factors are inhibiting strategic thinking and prevents OHR from operating in a proactive role as advisor or consultant. There is a need for OHR professionals to assume roles as functional experts, offer guidance to management and employees, train line managers in addressing OHR issues, and spend less time on administrative tasks.

The current emphasis within OHR is on control through the issuance of policies, procedures, and practices. There is a need to change this emphasis and shift more to the strategic side which requires that HR focus on business challenges. Reengineering human resources is important because:

a. Description. Many of the complex business issues the PTO faces today are human resource management issues. Whether meeting customer service goals or changing the emphasis from biotechnology to computer software, PTO managers need meaningful and accurate information about their employees. OHR will be exploring the installation and implementation of a new client/server Human Resources Information Management (HRIM) system that will, at a minimum, provide:

- A full-featured human resource solution that provides instant access to detailed records and on-line support for decision making

- Optimize hardware and database resources while implementing a system that's flexible, intuitive, and easy to use
- Automate tasks that once required stacks of forms and time-consuming research
- The most advanced resume scanning technology for hiring the most qualified job applicants
- A powerful, innovative system that gives us complete control over all aspects of generating our payroll
- Versatile and accommodating benefit administration solution.

OHR is looking for a system that will manage an employee's employment life-cycle and includes features such as:

- Open Systems
- Graphical Interface
- Distributed Processing for Optimum Performance
- A Choice of Relational Databases
- Flexibility for Various Hardware Options
- A System that Will Quickly Adapt to Our Unique Business Requirements
- Resume Reader/SF-171
- Benefits Administration
- Built-in Business Functions that Increase Productivity and Simplify Systems Management
- Advanced Security Options
- Easy Application Upgrades
- Payroll

- Personnel Actions
- Insightful Career and Succession Planning
- Automated Training Administration
- Better Business Correspondence
- Responsive Regulatory Reporting

The intent is that any OHR system selected will fully integrate with current and proposed administrative IS technology and also maintain current customer service interfaces.

b. Justification. HR must be a key business partner; managing human resources is as important as managing financial and non financial capital resources; HR must be able to support the reengineered business process and demand for services has increased while the resources available to HR has remained almost constant; and has to be able to design and develop a system to effectively measure outcomes in conjunction with implementing GPRA.

c. Status. HRIM is in the early stages of the BPR process but has identified an aggressive completion date for the "To-Be" model, July 1996. In addition, several HR and CIO staff members are setting up a demo to view two HR systems, PeopeSoft and Oracle-HR.

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
PeopleSoft Demo	11/95		11/95
Oracle-HR	12/95		
BPR Process	07/96		

6.4 Information Dissemination Automation Effort (PT-96-01-N)

The renewed understanding of the critical role of intellectual property protection in encouraging and supporting the nation's economic growth has in turn precipitated a new look at PTO's information dissemination program. As the PTO carefully examines how best to ensure adequate protection for intellectual property rights, its information dissemination component must determine how best to put knowledge of this protected

intellectual property into the hands of those who can put it to use. PTO fosters innovation by issuing patents on those inventions meeting the statutory criteria and by disseminating the technical information contained in patent documents. The U.S. patent system encourages inventors by providing the possibility of recognition and economic reward for their contributions to technological development. Similarly, the patent system provides assurances to those who invest in innovation. Patent documents contain valuable information on the state of technology, much of which is not readily available in other technical publications. By using this information, scientists and engineers can find solutions to technical problems without having to duplicate the research of others, and they can develop new and more efficient methods based on the patent disclosures of others. In this same vein, making trademark information available provides a higher level of assurance that product investments will be protected.

The extent to which intellectual property can influence the growth of the nation's economy depends in part on an awareness both of the benefits of intellectual property protection and of the creative output of those who disclose their ideas in return for protection. In meeting the information dissemination challenges of the future, the PTO must promote the use of intellectual property information. For the PTO to be successful, it must take an active role in disseminating information not just by making intellectual property information available, but also by creating and increasing public awareness of the value of its programs and information resources, and by facilitating their use.

The PTO makes information available by providing services and products from its headquarters offices, by supporting regional facilities such as the Patent and Trademark Depository Libraries, and by encouraging the development of commercial products and services. To provide quality service, the PTO must ensure that its customers have access to its data through a variety of products and services, including on-line services, CD-ROMs and magnetic tapes, and statistical reports. Some of these products and services are available to the public directly, while some are offered only at the public search facilities in Arlington, Virginia, and at Patent and Trademark Depository Libraries throughout the country.

6.4.1 On-Line Services

6.4.1.1 External Access Gateway

The external access program provides for public access to the PTO's automated data systems. At this time, the public has access to PTO-supported text search systems in its public search rooms and at Patent and Trademark Depository Libraries (PTDLs) around the country who subscribe to the service. Originally, 14 PTDLs were involved in a pilot program to provide access to the APS text search system from the libraries. In FY1995,

the PTO offered text access to all (then 78) libraries, implementing a tier-based subscription fee system. At the end of FY1995, 24 of the 80 PTDLs subscribe to the service. It is expected that additional libraries will subscribe in the next year.

The primary goal of this program is to provide automated access to patent text files to the PTDLs and to government agencies with features specifically designed for public users, such as assisted searching. It anticipates the use of the Internet to accomplish this end, relying on the acquisition of client-server software, contract support services, telecommunication services and equipment, and the development of specialized user interface software, technical documentation and user training/search aids. This program includes initiatives to establish electronic links to Trilateral Partners, the World Intellectual Property Office (WIPO) and/or other Intellectual Property Offices (IPOs) around the world.

a. Description. By taking advantage of the availability of an Internet connection to a Wide Area Information Server (e.g., WAIS), the PTO can develop and implement remote on-line services to the PTDLs and to other government agencies. This program will ensure that all PTDLs throughout the country have access to on-line searching of the PTO's patent data bases and search tools. By interconnecting with overseas high-speed telecommunication linkages, this service can be made available to the EPO as part of Trilateral agreements and, optionally, to other Industrial Property Offices (IPOs).

Modest programming support can provide interface software for user-friendly intuitive search, browse, retrieval, and assistance that can be maintained on-line, instantly accessible and upgradeable, thereby greatly reducing training and support functions at remote sites.

b. Justification. This program will use existing communications linkages to provide reliable, low-cost access to the PTO's search data bases with the interactive speeds, functional capabilities, and responsiveness necessary to provide remote on-line access to PTO's patent data bases and search tools. By developing and implementing a link between search and retrieval of patent data and a high-speed national telecommunications network, the electronic "super highway" capable of transmitting gigabits of data, the Patent and Trademark Office (PTO) directly promotes the effective access to the PTO resources throughout the country and throughout the world.

c. Status. Currently, on-line patent text searching is available to the public at the PTO's Search Rooms in Crystal City, Virginia, and in 24 PTDLs throughout the United States. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Make text access available to PTDLs (complete)	01/95		01/95
Provide patent text access to PTDLs via Internet	09/96	09/96	

6.4.1.2 Electronic Patent Information Center

The Electronic Patent Information Center (EPIC) takes advantage of the advances in technology to provide on-line access to patent and trademark information. Users can access the EPIC either from the Internet or from a modem dial-up bulletin board system which provides access to patent and trademark information throughout the world in a cost-effective manner.

a. Description. This program addresses the PTO's need to promote more effective access to patent and trademark information in compliance with Vice President Gore's mandate for a National Information Infrastructure (NII). Through the EPIC, the PTO provides on-line services to the PTDLs, to other government agencies, to the general public and to internal PTO users.

The EPIC will have as its core a Novell LAN which will consist of a communications server for dial up access, an Internet server using the commercial Wide Area Information Server (WAIS) and a WWW (World Wide Web) server, Internet access for the PTDLs and the current PTO Bulletin Board System (BBS). In 1994 using a World Wide Web server, the PTO provided a search file of AIDS-related patents with full document text search and image retrieval. In November 1995, using the same text software, the PTO provided a twenty-year patent bibliographic file for text search and retrieval for public access via the Internet. The EPIC will expand on the data, access, band width, capabilities and functionality of the current PTO BBS. Currently the BBS, with dial-in access through modems, provides: a) news and conferences; b) information about PTO services and products; c) patent bibliographic information; d) files to download; e) utilities; f) directory information; g) trademark information; and, h) help. The EPIC will upgrade the hardware link to the Internet through the Pioneer node at SIR, and expand services including the APS text searching for the PTDLs and downloading of compressed text files. In November, 1995, using a WWW server, the PTO provided the PatBib data base on the Internet for text search and retrieval of 20 years of patent bibliographic data.

b. Justification. The PTO will achieve greater and more effective access to patent and trademark information for all users. For Internet users in North America, the

WAIS (Wide-Area Information Server) and WWW (World Wide Web) Mosaic Server will provide more cost-effective and efficient access to patent and trademark information and various data bases. For those who do not have access to Internet, the BBS can be accessed using a computer with a modem and telecommunications software either directly or through FedWorld, the NTIS Gateway.

c. Status. The PTO currently operates a bulletin board system which supports several thousand users. Information posted to the BBS includes information about PTO products and services, patent and trademark fee schedules, official notices, and current patent data. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Build EPIC infrastructure	09/95		09/95
Build files and services	09/95		09/95
Make PatBib available to the public	11/95		11/95
Enhance PatBib files and services	09/96	09/96	

6.4.2 Electronic Information Products (Patents)

The PTO makes available machine-readable copies (on magnetic tape) of its patent and trademark data bases to customers who pay a fee based on the marginal cost of preparing and distributing the tapes. The customers who purchase patent text and image files are primarily large-scale retailers of on-line data base services who provide this data to thousands of customers; the firms who purchase trademark data have a similar clientele. The PTO also produces CD-ROMs which act as indexes for numerical collections at the PTDLs, contain electronic versions of search tools, and contain images of patent documents. This activity includes these products, a data base supporting them, and the provision of specialized information products from the data base. (See 6.4.4 for Trademark Products).

6.4.2.1 CD-ROM Products

This activity relates to the dissemination of patent information using CD-ROM. It includes current systems which provide patent image data on microfilm, anticipating the replacement of microfilm with CD-ROM. As one element of the PTO's Information Dissemination Program, this planning area is intended to ensure that PTO information on CD-ROM is available to the public in a timely fashion, in usable formats, and at a reasonable cost. As the availability of CD-ROM drives and public experience increases,

CD-ROM products will be used to a greater extent for dissemination of PTO information to the public, both directly and through the Patent and Trademark Depository Libraries (PTDLs), Public Search Rooms and other Intellectual Property Organizations. The primary objectives are to develop future products and systems, to assist our existing and projected customers, and to take advantage of new technologies and capabilities as they arise.

a. Description. This area includes continued production of existing titles, which use the Dataware Technologies, Inc. software (contract extended for FY1995-1998), as well as the production of patent weekly issue CD-ROMs, and other new patent CD-ROM products including, USAApps containing published patent applications, and USATM containing trademark registration certificates.

b. Justification. CD-ROM technology has been shown to be a cost-effective medium for the dissemination of large amounts of data to multiple users in user-friendly electronic formats. The use of CD-ROM technologies is seen as complimentary to the PTO's efforts at on-line information dissemination. With the advent of relatively inexpensive CD-ROM jukeboxes and the development of mixed-mode data/image formats, the possibility now exists to develop relatively large-scale search systems utilizing this medium. The continued decline in the cost of work stations, CD-ROM drives and laser printer technologies makes this dissemination medium increasingly attractive.

The technology is not without its drawbacks. Updating of CD-ROM data bases is less timely than is the case with on-line systems. This approach to data base delivery, however, will prove valuable to small law offices, research centers, libraries and any location where the cost of on-line services outweighs the need for up-to-the-minute information.

c. Status. The PTO currently masters five patent products containing text data, one patent product containing image data, two patent technology sets containing text and image data, and a series of English-language Japanese Abstract discs. This amounts to nearly 200 masters per year. As the demand for information products expands, several products will be contracted out to free in-house staff to develop new products and to improve current products. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Offer USPAT to PTDLs and Exchange Partners	06/94		06/94
Contract for CD-ROM production support	09/95		10/95

6.4.2.2 Technology Assessment & Forecast (TAF) Program

The Technology Assessment & Forecast (TAF) Program includes maintenance of the TAF database and support to PTO management in fulfilling the PTO's role as advisor to the Secretary and Administration in matters of policy concerning intellectual property and science/technology.

The goals of the program include:

- To respond in a timely manner to PTO management requests for patent statistics and patent trend analysis;
- To increase the types of patent data available and make them increasingly accessible to the public;
- To encourage the use and accessibility of patent statistics;
- To explore means for linking patent data to other statistics, particularly economic statistics, to make patent data a more useful tool for policy-making and research;
- To generate and maintain links between patent data and technologies considered critical to the national interest (technology profiles); and
- To study data for patents granted by other patent offices.

Additionally, the TAF data base is the major source of information that is used to produce the Patent and Trademark Office's (PTO's) CASSIS (Classification and Search Support Information System) CD-ROM products, the numerous TAF analytical and statistical reports published by the Patent and Trademark Office, and special reports requested by PTO management.

a. Description. Improving the TAF Program will result in providing a greater variety and depth of patent information and a shorter response time for specialized TAF reports. The TAF data files are continually increasing in size. This growth requires periodic upgrades to the Solbourne system to ensure timely response time for TAF specialized reports which are requested from internal and external users, and increased resources to maintain the data base and identify errors. Operational enhancements to this system would reduce time for manipulation of the data and report set-up, and improve data integrity.

The PTO must acquire contractor support to maintain the PTO's response time for TAF specialized reports which are requested from internal and external users and to ensure the TAF data files are kept current. This contract would provide the technical support needed to: 1) identify system problems before loss or corruption of the data files, 2) ensure that all new or upgrades to the system are compatible, 3) maintain and enhance TAF reports and system, 4) correct errors in the data files, and 5) develop new reports as required from PTO's internal and external users. Upgrades to the system will also be needed to keep pace with the ever-changing and increasing size of the data base.

b. Justification. Enhancement of the TAF Program will result in improved operational efficiencies and additional reporting capabilities which, in turn, will increase the accessibility and usefulness of the TAF data files.

c. Status. In FY1994-1995, TAF obtained contractor support for database enhancements, and initiated procurements for hardware upgrades and support and continued software support.

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Obtain Contractor Support	09/95		12/95
Migrate TAF Data Base Kernel to ORACLE 7	04/96	06/96	
Upgrade for PGPub	06/96		
Migrate TAF Applications to Client/Server	09/97-09/00		

6.4.2.3 Magnetic Tape Products

a. Description. This program provides patent and trademark databases, on magnetic tape, to the public, to in-house users and to Trilateral Partners (Europe and Japanese Patent Offices). Public customers are typically commercial vendors of patent

and trademark information who provide for wide-scale dissemination of PTO data to the public.

b. Justification. Magnetic tapes are provided to the public for the cost of dissemination of the product. Trilateral Exchange, beginning in 1995, will be paid for by the sending countries. The exception to this new policy is the set of full-document image tapes which the PTO has requested from the EPO for all non-U.S. documents in the First Page Data Base.

c. Status. Images tapes are produced at Boyers, text tapes are produced internally at the PTO by ACTO. ACTO and OEIP will work together to determined improved methods for enhanced customer service, and will consider the use of Boyers resources for all tape reproduction and dissemination.

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Contractor Report on current process	12/95		12/95
Contractor Final Recommendations	03/96	03/96	

6.4.3 Trilateral Activities

This program provides effective access to patent and trademark information products throughout the world by developing standards and products for exchanging information with the Industrial Property Offices (IPOs) using various electronic technologies.

6.4.3.1 Mixed-Mode CD-ROM Software

a. Description. The European Patent Office, the Japanese Patent Office, and the United States Patent and Trademark Office (the Trilateral Offices or TOs) agreed to joint development of new CD-ROM indexing and retrieval software. The software, called MIMOSA for MIxed-MOde Software Application, will be used by all three for their patent information products published on CD-ROM. A world-wide competitive procurement, under the direction of the EPO, was released on January 10, 1992. A contract was awarded to Jouve, France, in October, 1992. The technical team recommended the terms of the final agreement to the heads of the Trilateral Offices in late 1994. The TOs made a partial payment to Jouve in December, 1994, when they decided to accept the software provided further progress would be forthcoming. Final acceptance occurred in February, 1995. The software warranty year ends on January 31,

1996. Enhancements to the product are continuing as authorized by the Trilateral Partners.

b. Justification. It has been a goal of the Permanent Committee on Industrial Property Information (PCIPI) of the World Intellectual Property Organization (WIPO) that all types of industrial property information should be searchable through a common user interface to a common retrieval engine. The MIMOSA project was originally conceived by the USPTO as a means of providing a CD-ROM development tool not only for all industrial property offices, but also for anyone who wished to take advantage of it. In addition, the use of software owned by the Trilateral Offices will give them greater control over its future development, making it increasingly useful for industrial property information, and reduce, if not actually eliminate, the cost of end-user licenses.

c. Status. Phase II of the development cycle was completed in February, 1995. The user interface has reached final form and the retrieval engine has been adapted to the needs of the Trilateral Offices. The authoring software development has also been completed. The JPO has begun producing CD-ROM products using MIMOSA. The USPTO will explore the development of products using MIMOSA during FY1996. Activity and product milestones are:

	Completion Dates		
	Initial	Current	
Tasks/Products	Projection	Projection	Actual
Completion of Development Phase II	07/95		07/95
Commencement of product migration	09/95	01/96	
Start Phase III Development	01/96	01/96	

6.4.4 Electronic Information Products (Trademarks)

The PTO makes available machine-readable copies (on magnetic tape) of its trademark data bases to customers who pay a fee based on the marginal cost of preparing and distributing the tapes. The customers who purchase trademark text and image files are primarily large-scale retailers of on-line data base services who provide this data to thousands of customers; the firms who purchase patent data have a similar clientele. The PTO also produces CD-ROMs which contain trademark text information, provide access to Trademark Official Gazettes at the PTDLs, and contain electronic versions of search tools. CD-ROM containing trademark text and image data are planned.

This activity relates to the dissemination of trademark information using CD-ROM. As one element of the PTO's Information Dissemination Program, this planning area is

intended to ensure that PTO information on CD-ROM is available to the public in a timely fashion, in usable formats, and at a reasonable cost. As the availability of CD-ROM drives and public experience increase, CD-ROM products will be used to a greater extent for dissemination of PTO information to the public, both directly and through the Patent and Trademark Depository Libraries (PTDLs), Public Search Rooms and other Intellectual Property Organizations. The primary objectives are to develop future products and systems, to assist our existing and projected customers, and to take advantage of new technologies and capabilities as they arise.

a. Description. This area includes continued production of existing titles, which use the Dataware Technologies, Inc. (contract extended for FY1995-1998), as well as the development/production of new trademark CD-ROM products.

b. Justification. CD-ROM technology has been shown to be a cost-effective medium for the dissemination of large amounts of data to multiple users in user-friendly electronic formats. The use of CD-ROM technologies is seen as complimentary to the PTO's efforts at on-line information dissemination. With the advent of relatively inexpensive CD-ROM jukeboxes, and the development of mixed-mode data/image formats, the possibility now exists to develop relatively large-scale search systems utilizing this medium. The continued decline in the cost of work stations, CD-ROM drives and laser printer technologies makes this dissemination medium increasingly attractive.

The technology is not without its drawbacks. Updating of CD-ROM data bases is less timely than is the case with on-line systems. This approach to data base delivery, however, will prove valuable to small law offices, research centers, libraries and any location where the cost of on-line services outweighs the need for up-to-the-minute information.

c. Status. The PTO currently masters 18 trademark text products per year. As the demand for information products expand, production will be contracted out to free in-house staff to develop new products and to improve current products. Activity and product milestones are:

	Completion Dates		
	Initial	Current	
Tasks/Products	Projection	Projection	Actual
Issue Solicitation for Trademark CD-ROM Production	09/95		09/95

6.4.5 Support for Public Search Facilities

The PTO operates search facilities in Arlington, Virginia, where the public can research and obtain information.

The Patent Public Search Room provides access to the following information sources:

- Classified File of U.S. Patents. This file, (which, including cross-references, contains approximately 15 million U. S. patent documents in paper form), is organized by the US Patent Classification system.

- Numeric File of U.S. Patents. Bound volumes of patents and their images on microfilm are maintained in numeric order sets facilitating access to a specific document if the document number is known.

- Patentee/Assignee Records. Supplementary files of recent patentees (in alphabetic order) and ownership records are also available.

- The Patent Search Image Retrieval Library. This new facility provides, for a fee, access to both on-line patent image and text search. It contains dual-screen Classified Search and Image Retrieval (CSIR) workstations and printing facilities.

- CD-ROM Disc Access. Access to PTO-origin CD-ROM products (both search and printing capability), is available without charge.

The Trademark Search Library contains paper copies of trademark applications and registrations which are organized by the characteristics of the words contained in the mark or the design elements which supplement (or replace) the words. For a fee, trademark searchers may use the automated trademark search system (X-Search) which enables the user to search for words (including spelling variations and phonetic searching), or retrieve design elements by classification.

The Patent and Trademark Assignment Search Room contains information on the current and previous ownership of both patents and trademarks.

Currently there are 80 Patent and Trademark Depository Libraries (PTDLs) located throughout the United States that maintain collections of U. S. patents arranged in document number sequence. Numeric files are utilized since the costs of maintaining classified paper search sets are beyond the budget and space capabilities of the PTDLs. CD-ROM products provide the PTDLs with access to numeric files, as well as current

information on patents and trademarks. The PTDLs provide copies of patents, supplemental references (including the Patent and Trademark Official Gazettes), and a variety of auxiliary information sources. On-line remote access to the Automated Patent System Patent Text Search and Retrieval (APS-Text), originally installed in fourteen PTDLs in August 1991, is now available to the entire PTDL network on a subscription basis, the cost of these services being recovered on a marginal basis. In subscription PTDLs, staff and patrons enjoy word, classification and numeric searching of all text elements of U.S. patents since 1971. Benefits include immediate availability of new weekly issues, sophisticated Boolean search and browse capability, downloading of patent copies to disc, and search access to the content of patents. PTDLs are generally regarded as regional information centers for all forms of intellectual property.

6.4.5.1 Automated Fee Collection System

a. Description. The PTO imposes fees for the use of its automated systems in its public search facilities. The goal of this project is to acquire an automated fee collection system for the systems in the Public Search Rooms which requires little or no staff involvement to administer or maintain, and which will collect appropriate usage statistics for financial and workload analyses. The system will use debit terminals to charge for printing from the automated systems and for time used on search systems. An automated scheduler will be implemented for the Classified Search and Image Retrieval System. This acquisition will include the networking of CD-ROM stations in the search room, and training on the use and maintenance of all equipment and software.

b. Justification. Without these improvements the office will continue to lose revenue for public use of PTO's PALM and TRAM systems. Staff resources needed for customer assistance will continue to be needed to support manual charging systems, and will remain unavailable to search room patrons.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Prepare procurement documents	07/94		07/94
Contract award	08/95		08/95
Implementation of CD-ROM module (other modules implemented as funds made available)	09/95	04/96	
All billing modules implemented	09/98	09/98	

6.4.5.2 Modernize the General Information Services Division (GISD)

This activity was previously named Automate Public Service Branch. It has been renamed to reflect the expanded scope of the project and the realignment of the unit from a Branch to the new Division. Last year the GISD answered 150,000 telephone and walk-in inquiries for general information about the patent and trademark systems and the services and operations of the PTO. In addition, GISD mailed 90,000 booklets, forms, and informational documents and responded to 2400 pieces of correspondence.

a. Description. The General Information Services Division must modernize and improve all of its functions and services to enable the Division to provide improved customer services within the present FTE confines. The modernized functions of providing verbal, written, and document responses to customer inquiries will be automated and integrated (PC-based LAN) to allow the agents to respond quickly and efficiently with greatly reduced delay times and abandonment rates for our customers. Although the recently installed Automatic Call Distribution (ACD) has already provided substantial improvement of the services provided, automating the remaining functions of information dissemination of the Division and integrating those functions with the ACD provides the Division with an environment for additional dramatic improvements to the services to the PTO's general information customers. By November, GISD will assume responsibility for the automated information message system in-house with its additional 215,000 calls. In order to accomplish this and meet the rising call volume of the agent assisted lines with existing FTE, tasks must be able to be performed more easily, quickly, correctly, consistently, and effectively.

b. Justification. Currently the GISD is providing much improved service due to the installation of the ACD. However, delay times and abandonment rates are still far above the industry standards for an effective call center. Since additional agents are not a viable option at this time, reengineering the remaining functions of the Division is imperative to allow for more customer response productivity and fewer staff hours devoted to antiquated, labor intensive, and slow manual processing functions. With rising call volume workloads and without modernizing the functions, delay times (which also increase abandonment rates) will begin to produce the high level of customer complaints which were experienced in the past.

c. Status. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
Prepared procurement documents	04/95		04/95
Prepared Requirements Initiative	07/95		07/95
Contract award	08/95		08/95
Implementation	09/96		09/95
Enhancement and maintenance	09/97-09/01	10/95-09/97	

6.4.5.3 Partnership Agreements

a. Description. This initiative institutes formal partnership agreements with existing PTDLs in the nationwide network of 80 on a case-by-case basis, to enhance intellectual property services to a region, to increase the PTO's presence in that region and to increase PTO's responsiveness to unique industry/customer bases. The foundation for such partnerships lie in the mutual capability of each partner to establish a fiscally responsible program for funding enhanced services and products. Business plans provide for cost recovery reimbursement to the PTO over specific time frames, and provide the PTDL partner with funding opportunities for further service enhancements and partnering opportunities with related organizations in their region.

b. Justification. PTDL partnerships afford the PTO with the following opportunities: they pave the way for FTE relief as workloads shift to partnership locations; they increase the visibility of the PTO to a region's specific user/industry base through a variety of partnership mechanisms; they offer a marketing opportunity for new PTO products and services allowing the PTO to diversify its product base; and increase and enhance the PTO's information dissemination efforts on a cost recoverable basis.

c. Status. In FY1995, partnership agreements were negotiated and formalized first with the Sunnyvale PTDL and later with the Detroit PTDL. Activity and product milestones are:

Tasks/Products	Completion Dates Initial Projection	Current Projection	Actual
On-line patent image search and televideo conference capabilities available at the Sunnyvale PTDL	06/95		06/95
On-line patent image search and televideo conference capabilities available at the Detroit PTDL	11/95		11/95

6.4.6 Patent and Trademark Copy Sales (PTCS)

PTCS is a standalone order entry and production system that enables the public and PTO staff to place orders for copies of patents and trademarks. Order information for patent copies is passed to the APS system, which retrieves the images of the patents from the high resolution database. Patent copies are then printed out and subsequently processed to associate them with a specific order for packaging and distribution. Trademark copies are reproduced on photocopiers from paper or film masters (comprising less than 3 percent of all PTCS orders, most trademark orders are generated "in house" by the Office of Public Records).

PTCS development began in February 1991. In April 1992, the first version of PCs was implemented. This version enabled the PTO to replace its existing paper- and microfilm-based production systems with an automated means of filling public requests for patent copies. Since patents were printed in the order which optimized their retrieval from the High Density Disk Drives in October 1992, Version 1.0.1 enhanced the basic system to provide separator sheets between printed patents to facilitate the manual process of collating them into customer orders.

Order collation (facilitating the packaging and fulfillment of the orders and reducing labor costs) was implemented as Version 1.0.2. In parallel, a front-end order-entry subsystem was developed to replace the proprietary system of the incumbent PTCS production contractor. Large scale printing capabilities will be implemented in Version 2.0 in FY1995. Current estimates are that PTCS will provide 872,000 paper copies in FY1996 and beyond, resulting in a net revenue of $700,000 annually.

The Pre-Grant Pubs system will result in the availability of new products beginning in FY1996. These products will include Technical Content Publications and part or all of the filewrapper. To meet this need, a parallel print system known as PGCS will be

developed and the front-end order entry subsystem will be redesigned. The next phase will be to integrate PTCS, PGCS, and OEMS into one system with an integrated database. PGCS is expected to provide 800,000-900,000 copies in FY1997.

a. Description. With the implementation of Version 2.0, the PTO considers PTCS to have completed full deployment. In FY1995 the PTO completed an analysis of OEMS using TSRM and implemented the stabilization recommendations. Beginning in FY1995 and continuing into FY1996, the PTO will implement the transformation recommendations which include a redesign of the database and addition of user required enhancements as well as the requirements resulting from PGPubs. Operations and maintenance activities are required from FY1996 to FY2001 for PTCS, OEMS, and PGCS. In FY1995 and FY1996, the PTO will develop PGCS to meet the requirements of PGPub. After deployment of PGCS and the redesigned OEMs, PTO will redesign PTCS to operate using an Oracle data base and to correct deficiencies in the current system. PTCS, OEMS, and PGCS will be integrated.

b. Justification. Operations and maintenance of the PTCS system ensures that the Commissioner's "important secondary priority," information dissemination, will be supported effectively through sales of patent copies to the public.

c. Status. Activity and product milestones are:

	Completion Dates		
Tasks/Products	Initial Projection	Current Projection	Actual
Support PGPub technical content publication sales	06/96	04/96	
Support PGPub patent filewrapper sales (PGCS)	09/96		
Deploy integrated system (PTCS, PGCS, OEMS)	09/97		

Chapter 7

INFORMATION TECHNOLOGY CUSTOMER SERVICE STANDARDS

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Chapter 7

INFORMATION TECHNOLOGY CUSTOMER SERVICE STANDARDS

7.1 Introduction

Because the PTO places great emphasis on meeting customer needs, it has established 25 internal and 43 external customer service standards against which all future performance will be measured and benchmarked against the "best in business." Further, as the PTO transitions to a wholly owned government corporation, it intends to pursue the goal of becoming the first organization in the Federal government that is both performance-based and customer-oriented.

Consistent with the PTO's focus on customer service, the Office of the Chief Information Officer (OCIO) has developed "eleven" information technology (IT) program customer service standards. These IT customer service standards have been incorporated into agency-wide strategic, operational, tactical, and budget planning documents. The PTO has conducted several customer service surveys to re-validate these standards and to evaluate the OCIO's performance in meeting them.

In late 1994, the PTO commissioned Mathis and Associates to conduct an independent customer service assessment of the OCIO's support for the patent examiners. The primary focus of the Mathis assessment effort was on developing measurable data on the levels of internal user expectations and satisfaction with the Automated Patent System (APS). The Mathis assessment, which surveyed 724 patent examiners, concentrated on the APS's text search, classified search, and image retrieval capabilities. The examining corps regularly use these components of the APS to make patentability decisions affecting patent applications. It was decided that other aspects of APS would be reviewed at a later time.

In January 1995, Mathis and Associates issued the following results of its independent assessment:

- When asked what research tool the examiners would keep if they could keep only one, all focus groups chose APS.
- Access to image and text on the desktop is the examiners number 1 priority.
- 82% of the examiners were satisfied with the overall reliability of APS and the effectiveness of the Help Desk.
- Seven out of ten examiners gave favorable ratings to APS's overall user-friendliness.

- 83% of the examiners indicated that text search at the desktop meets their needs.
- 80% of the examiners were satisfied with initial APS training, but 49% were dissatisfied with refresher/update training on APS.
- 90% of those examiners with image search capability find workstations available when needed.
- Examiner focus groups were virtually unanimous in their support of APS as a productivity enhancer.
- Most examiner focus group participants observed that electronic search and retrieval offers the only hope of staying on top of expanding prior-search literature.

The Mathis assessment also identified several problem areas which are currently being evaluated by the PTO. These problems are focused in the following three areas: automation training, user feedback, and ease of use. In the automation training area, the assessment identified a need to: initiate art specific indoctrination training; assign APS experts to each examiner art group; and enhance refresher training. In the user feedback area, the assessment focused on the need to: restructure the roles and support for APS and office automation advisors; implement a bulletin board service on PTOnet; create a Documentation Panel to ensure that adequate user documentation exists for all PTO-supported automated tools; create accessible electronic user documentation; and establish a formal group meeting to provide a forum for examiners to raise automation issues. In the ease of use area, the assessment addressed the need to: negotiate flat rate pricing for commercial data bases; improve the maintenance of all shared automation equipment; provide a single log-on for multiple databases; and establish a policy that emphasizes user friendliness of the APS as a prime consideration over ease of implementation.

Mathis and Associates has now been commissioned to conduct follow-on reviews of three additional automated information systems (AISs): Patent Application and Location Monitoring (PALM) System, Trademark Reporting and Monitoring (TRAM) System, and the Trademark Search (X-Search) System. The main objectives of these reviews are to: determine how well the front-line end-user perceives each system is meeting their business needs; assess each system from the non-management user's point of view; and provide important information to the PTO to be used in planning for future information technology program objectives, needs, and resources.

In addition to the Mathis assessement, the OCIO conducted a customer service assessment which included a random sample of 2500 PTO employees. The OCIO assessment also confirmed the validity of the information technology customer standards and indicated that the OCIO's customers were generally satisfied with the OCIO's performance against the standards.

7.2 Current Customer Service Standards

Since issuance of the original list of "eleven" information technology customer service standards referenced in the recent January 1995 edition of the PTO's Strategic IT Plan, some changes have been necessary. Two additional PTO-wide customer standards have been added.

All customer service standards are listed below. The first two are PTO-wide standards.

- Treat PTO customers with courtesy each time they contact us and direct them promptly to the proper person or office.
- Return customer calls within one business day or provide an alternate point of contact.
- Achieve a 70% reduction in PALM/TRAM/CRDA system software errors by 1996.
- Provide the Patent Corps electronic access to all U.S. patents by 1995.
- Provide the Patent Corps with one high speed walk-up group printer for each floor in the Patent Corps by 1997.
- Provide workstations to more examiners as funding permits.
- Provide production network operation seven days/week for all major on-line systems by October 1, 1994.
- Certify APS workstation/group printers and X-Search workstations are operational and ready prior to network operational hours.
- All microcomputer trouble calls will be responded to within two hours.

- Notify user areas within 10 minutes of operational failures and unplanned and emergency outages; update every 30 minutes until the problem is resolved.

- Establish service level agreements with customer areas within the PTO by October 1, 1994

- Provide weekly report of problem/resolution trends and activities to user community.

- Conduct weekly meetings with user representatives.

A detailed explanation of why these standards were developed, as well as key actions taken, underway, and planned is provided below.

7.2.1 Treat PTO Customers With Courtesy Each Time They Contact Us and Direct Them to the Proper Person or Office

This standard was developed to increase PTO-wide customer awareness and to ensure a significant improvement in employee responsiveness to both internal and external customer needs, priorities, and expectations.

Implemented/Planned Actions

Actions already taken, underway, or planned include the following:

- The CIO has made customer focus an integral part of OCIO performance evaluation plans.

- Customer Service Training will be provided to all OCIO by the end of Fiscal Year 1996. Close to half of the OCIO employees have completed this training to date.

- WED telephone technique training will be completed by all of OCIO administrative personnel by the end of Fiscal Year 1996.

- The OCIO will review and correct the telephone forwarding system by the end of Fiscal Year 1996.

- The OCIO will develop an OCIO Point of Contact Directory for distribution by the end of Fiscal Year 1996.

7.2.2 Return Customer Calls Within One Business Day or Provide and Alternate Point of Contact

This standard was developed to increase PTO-wide customer awareness as well as to ensure a significant improvement in employee responsiveness to both internal and external customer needs, priorities, and expectations.

Implemented/Planned Actions

Actions already taken, underway, or planned, include the following:

- All OCIO correspondence must include a point of contact's name and telephone number.
- All OCIO employees must return telephone calls within one business day, when possible, or provide an alternate point of contact.

7.2.3 Achieve a 70% Reduction in PALM/TRAM/CRDA System Software Errors by 1996

This standard was developed to respond to the demand for significant improvements in PALM/TRAM/CRDA system operational reliability and stability.

Implemented/Planned Actions

Actions already taken, underway, or planned include the following:

- Issued the Life Cycle Management Manual, which was approved by the Chief Information Officer in July 1995.
- A new methodology, including periodic Technical Review Board (TRB) reviews, and a plan of attack now exists for adding new methodologies to legacy A-16 systems.
- A dedicated Office of Systems Quality and Enhancement (OSQE) person has been assigned to PALM and the PALM Interest Group.
- The existing A-16 testing methodology in the Trademarks area has been identified for possible reuse with PALM.

- A draft Testing Plan and Configuration Management (CM) Plan now exists for PALM.

- An Independent Verification and Validation (IV&V) Contractor is currently working with in-house staff to develop a detailed PALM testing methodology, including actual applications for selected modules.

7.2.4 Provide the Patent Corps With Electronic Access to All U.S. Patents by 1995

This standard was developed to respond to the demand for a more complete and reliable U.S. patent database.

Implemented/Planned Actions

All work on this standard is now completed. Actions taken, include the following:

- Completed load of entire image database in FY1993. This image database is now accessible to the entire Patent Corps through "shared use" workstations.

- Completed load of 166,000 post-1970 patents into the text retrieval system. (Note: Based upon current requirements defined by the examining corps management, there are no plans at this time to provide similar retrieval capability for patents issued prior to 1971.)

7.2.5 Provide the Patent Corps With One High Speed Walk-Up Group Printer for Each Floor by 1997

This standard was developed to respond to the demand for increased group printer access and availability.

Implemented/Planned Actions

Actions already taken, underway, or planned include the following:

- A total of 60 new high speed group printers are currently scheduled for deployment by the end of September 1996. Thirty seven are intended to serve as replacements for existing first and second generation high speed printers. The remaining balance (twenty three) are intended to serve as added capacity.

- The PTO will deploy 60 more printers by September of 1997.

7.2.6 Provide More Workstations As Funding Permits

This standard was developed to respond to desktop user demand for single keyboard access to all available tools through a user friendly Graphical User Interface (GUI).

Implemented/Planned Actions

Actions already taken, underway, or planned include the following:

- Deployed 40 "shared use" workstations in May 1995 to support Group 2600.
- Begin deploying desktop workstations to patent examiners in January 1996 and continue this deployment through December 1997.

7.2.7 Provide Production Network Operation Seven Days A Week for all Major On-Line Systems

This standard was developed to respond to the demand for significant increases in the availability of current on-line systems and associated user support services.

Implemented/Planned Actions

Actions already taken, underway, or planned include the following:

- Beginning October 1, 1995, the PTO established seven day per week service hours for all major networks, including Saturday, Sunday, and holidays from 7:30 am - 5:00 pm.
- Completed review of all maintenance and product installation activities and undertook a rescheduling effort to ensure that these activities would not interfere with the newly required Sunday hours.
- Initiated efforts to correct all deficiencies in current operations by September 1996 to include proper maintenance support for personal computers and improved network reliability.

- Redirected FY1995-FY1997 funding from development to adequately resource operations and maintenance activities.

- Completed purchase and installation of new network diagnostic software tools.

- Completed addition of new software applications to current suite of office automation software, including a relational database management system - ACCESS.

- Initiated the upgrade of all current PTOnet software applications to the latest versions. This effort is scheduled for completion by the end of second quarter, FY1996.

- Completed efforts to ensure all Trademark Law Offices have adequate hard disk space on file servers, as well as to ensure that an entire Law Office does not reside on one file server.

- Completed review of current computing platforms to determine which are candidates for consolidation, co-location, or remote operation through PTOnet.

- Completed review of current computer center operations to determine where they can be automated to reduce operational costs and improve service.

7.2.8 Certify APS Workstations/Group Printers and X-Search Workstations are Operational and Ready Prior to Network Operational Hours

This standard was developed to respond to the demand for significant improvements in the quality of current systems repair and maintenance support services.

Implemented/Planned Actions

Actions already taken, underway, or planned include the following:

- Allocated technical support to check workstations and group printers prior to operational hours.

- Added necessary additional maintenance contracts.

7.2.9 All Microcomputer Trouble Calls Will be Responded to Within Two Hours

This standard was developed to respond to the demand for faster response time on PC-based systems repairs.

Implemented/Planned Actions

Actions already taken, underway, or planned include the following:

- Improved problem call handling procedures.
- Improved Help Desk Assistance through added contractor support and office automation capability.
- Developed improved Help Desk procedures to facilitate "following the problem call through resolution".
- Established procedures to ensure that all microcomputer problems shall, hereafter, be responded to within two hours during normal business hours.

7.2.10 Notify User Areas Within 10 Minutes of Operational Failures and Unplanned or Emergency Outages; Update Every 30 Minutes Until Resolved

This standard was developed to respond to the demand for significant improvements in the current help desk and problem notification system.

Implemented/Planned Actions

Actions already taken, underway, or planned include the following:

- Completed efforts to standardize call procedures and notification methodology.
- Established procedures to notify users within 10 minutes of all operational failures as well as unplanned and emergency outages.
- Established procedures to provide users a minimum of 48 hours advance notice before servers are removed for maintenance.

7.2.11 Establish Service Level Agreements With Customer Areas Within the PTO by October 1, 1994

This standard was developed to respond to the demand for significant improvements in the quality and timeliness of current repair and maintenance support services, customer assistance, on-site troubleshooting, and problem reporting.

Implemented/Planned Actions

Actions already taken, underway, or planned include the following:

- Two different Service Level Agreements have been formally established, to support the Trademarks and Information Dissemination areas.

- Work on two additional Service Level Agreements is planned for the Patent and Financial and Administrative Systems areas.

The Service Level Agreements, which are binding on both the OCIO and its customers, establish customer and provider service expectations as well as workable mechanisms for problem resolution. The agreements establish realistic and achievable two-way contracts for services at required, cost effective levels. The beneficial effects on daily business processes are tremendous. Further, both the OCIO and its customers are gaining a mutual understanding of essential PTO business processes and the direct impact of information technology on Patent and Trademark performance and service to external customers. As a result, the PTO has greatly expanded its adherence to the basic tenets of the National Performance Review.

7.2.12 Provide Weekly Report of Problem/Resolution Trends and Activities to User Community

This standard was developed to respond to the demand for significant improvements in current program status reporting.

Implemented/Planned Actions

Actions already taken, underway, or planned include the following:

- Publication of the Information Systems Executive Report.

- Providing daily, weekly, and as required reports to customers on problems and plans.

7.2.13 Hold Weekly Meetings With Customer Representatives

This standard was developed to respond to the demand for significant improvements in communications with the user community.

Implemented/Planned Actions

Actions already taken, underway, or planned include the following:

- Regularly scheduled meetings are now being held with Patents and Trademarks. As required, meetings are also being held with all ISO organizations under purview of the Associate Commisssioner and Chief Financial Officer.

- Firm dates and times have been established for these meetings.

Appendix I

MASTER IMPLEMENTATION SCHEDULE FOR KEY INITIATIVES

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Appendix 1

MASTER IMPLEMENTATION SCHEDULE FOR KEY INITIATIVES

INITIATIVES	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01
Text Search	Sep 96 - Complete concept phase.	Oct 96 - Begin acquisition phase for Replacement Text Search System.	Sep 98 - Complete acquisition phase for the Replacement Text Search System.	Dec 98 - Begin deployment phase for the Replacement Text Search System.	Continue deployment of Text Search Replacement System.	Sep 01 - Complete deployment phase for the Replacement Text Search System.
Classification Data Systems (CDS)	Nov 95 - Begin use of prototype for selected reclassification projects. Sep 95 - Complete deployment of CDS 1.1.		Oct 97 - Begin concept phase for CDS 2.0. Sep 98 - Image ready professional reclassification (CDS 2.0) prototype available on image-type workstation.	Sep 99 - End of implementation of image-ready professional reclassification with access to electronic databases (Internet and other commercial databases).		
Examination Toolbox	Jan 96 - Deploy electronic forms. Mar 96 - Begin migration of existing tools to Desktop Workstations.		Dec 97 - Complete migration of existing tools to Desktop Workstations.			
Desktop Workstations	Dec 95 - Begin deployment of desktop imaging workstations to examiners. PTOnet "A" to PTOnet "B" 100mb link completed.	Sep 97 - Complete desktop imaging workstation deployment to the examining corps. Dec 96- Deploy 700 desktop workstations to patent and trademark examiners. Client standard Operating System established.	Sep 98 - Complete conversion to Windows NT. Complete deployment of desktop imaging workstations to all internal customers. Dec 97- Additional 1600 desktop workstations installed.	Aug 99 - Complete Software Maintenance Release.	Jun 00 - Begin hardware upgrade. Aug 00 - Complete Software Maintenance Release.	Sep 01 - Complete hardware upgrade. Aug 01 - Complete Software Maintenance Release.
Global Patents	Jun 96 -- Begin project to load full images of First Page project documents. Sep 96 -- Complete First Page (clipped image and text) prior-art search file operational (to entire Corps).	Jan 97 - Begin expansion of prior-art search file to include First Page full images. Jan 97 - Begin expansion of prior-art search file to include the complete full image Global Patent database.	Sep 98 - Complete loading of First Page full image search file.	Oct 98 - Begin loading remaining Global Patent documents (Global Patent Library Storage).		Sep 01 - Completion of Global Patent Library Storage.

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MASTER IMPLEMENTATION SCHEDULE FOR KEY INITIATIVES

INITIATIVES	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01
Patent Application Location and Monitoring (PALM)	Mar 96 -- Deploy PALM-on-PTOnet Early Access capabilities to Patent Corps. Mar 96 -- Award PALM Redesign Contract. Jun 96 -- Complete PALM Stabilization activities to include current system document., code stabilization, implementation of CM, QA, test plans and procedures. Jan 96 -- Modify PALM to process PGPub applications. Sep 96 -- Complete planning and preliminary analysis for PALM redesign.	Oct 96 - Complete PALM-on-PTOnet development. Complete PALM Stabilization activities to include data modeling and PACE II deployment. Complete Detail Analysis and design for PALM Redesign. Begin development of redesign PALM. PALM users able to access RAM for data Complete PALM-on-PTOnet deployment to the Patents Corps. Complete development of redesigned PALM. Begin PALM migration. Begin deployment of redesigned PALM. Aug 97 -- Implement Century Date Change.	Complete deployment of redesigned PALM.	Begin integration of Redesigned PALM with PAM.	Complete integration of Redesigned PALM with PAM.	
Revenue Accounting and Management (RAM)	Apr 96 -- Complete Detailed Analysis. Sep 96 -- Complete Development of RAM 1.0. Sep 96 -- Begin Deployment of RAM 1.0.	Complete Deployment of RAM 1.0. Evaluate operational system. Develop RAM version 1.1 with enhancements to pilot EDI for maintenance fee payments.	Develop RAM 2.0 with standard interface for integrating fee processing with other PTO systems.	Begin integration of fee processing with select PTO systems.	Continue integration with select PTO systems.	Continue integration with select PTO systems.
Electronic Filing	Dec 96 -- Complete Floppy Diskette Version of Implementation Guide. June 96 - Complete Final Version of Concept of Operations.	Complete On-Line version of Implementation Guide. Begin pilot testing electronic filing with document management system prototyping effort.			Begin electronic filing.	
Patent Application Management System (PAM)	Begin PAM system analysis Nov 95- Complete Economic Analysis.	Complete high level data and process models.	Begin PAM design, analysis, and development.	Complete PAM Version 1.	Complete PAM Version 2.	Complete PAM Version 3.

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MASTER IMPLEMENTATION SCHEDULE FOR KEY INITIATIVES

INITIATIVES	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01
Integrated Network Implementation	Detailed Design Completed.	Backbone and Campus Switching Network installed. All Crystal City buildings integrated on one network. Limited 100 Mbs to desktop.	Beta testing complete on all functional systems.	All buildings upgraded to full high speed switching architecture. Virtual networking capability. Full 100 Mbs to desktop.		
Integrated Network	OA Server purchase an installation complete.					
PTOnet Server Evaluation and System Upgrade		New Rapid Access Devices (RADs) operational.	Standardized Network Operating System and Server replacement completed. Electronic Commerce Pilot Gatew Installed. New High Density Devices (HDDs) Text Search Replacement Pilot Operational.	Planned server technology review and upgrade. Electronic Commerce gateway fully operational.	Text Search Replacement System fully operational. Replacement of APS Text and Image Storage Devices completed.	
Simple Network Management Protocol (SNMP)	Expanded APS Administration and Control capabilities installed.	Remote management of Client Applications.		SNMP extensions programmed to replace SMS.		
Asynchronous Transfer Mode (ATM) Implementation	ATM Backbone install on PTOnet. ARPA's Advanced Technology Demonstration network Interface connected.	ATM to Desktop Pilot completed.	ATM operationally available t selected network segments.			
Network Management System (NMS) Implementation	NMS upgrade of Openview and addition of COTS support software.		NMS expansion to support infrastructure modifications	Control Administration and Control operationally available.		
Security	Internet access implementation completed. OA secure access from home. Trademark Work at Home Pilot completed.	Advanced security applications evaluation complete.	Secure Public access fully implemented. Secure enterprise-wide login and audit available. Certification and accreditation at PTOnet.	Trademark Work At Home fully operational.		

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MASTER IMPLEMENTATION SCHEDULE FOR KEY INITIATIVES

INITIATIVES	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01
Trademark Reporting and Monitoring System (TRAM)	Reduce PTO law office from 13 to 9. For STAF- Deploy initial STAF capability allowing queries from desktop PCs. Implement production o camera ready copy of TMOG and original and updated registration certificates. Assess feasibility of using standard forms Assess feasibility of scanning paper input. Scan application drawin page images in trademark work areas. Begin on-line printing of application drawing page images in Trademark work areas	Deploy integrated PC based New Application Data Entry and Text Editing System. Initiate on-line printing of file jacket labels and filing fee receipts in Trademark work areas. For STAF- Migrate current TRAM BCR and CRT transaction processing to desktop PCs. Begin external access to on-line TRAM query capability available at remote customer locations.	Deploy enhanced automated data validati edits.			
Trademark Search System (X-Search)	April 1996- Version 1.1 ready for use on TM examiners desktops.	Deploy automated international class assignment process.	Expand use in TM Sear Library. Deploy automated pseudo mark creation process.			
Patent and Trademark Assignment System (PTAS)	Jan 1996- Implement PGPub enhancements.					
Trademark Work At Home (TWAH)	Dec 1995- Receive requirements. April 1996- Complete system design Aug 1996- Complete development and testing. Sep. 1996- User trainin and testing. Sep. 1996- Implement Version 1.0. Start pilot.		Sep. 1998- End of pilot.			

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MASTER IMPLEMENTATION SCHEDULE FOR KEY INITIATIVES

INITIATIVES	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01
Trademark Trial and Appeal Board Information System (TTA/BIS)	February 1996- Implement generation o letters on employees' desktop PCs (BISM). April 1996- Implement PC based data entry and text editing on employees desk top PCs (BISE). August 1996- Implement enhanced management reporting process (BISR).					
Trademark Information System (TIS)	Publish PTO color image scanning standard.	Publish Trademark database models. Deploy on-line retrieval of Trademark OG Imag Deploy on-line retrieval of Registration Certifica and Updated Registration Certificate Images. Deploy color image scanning softwar Deploy CD-ROM Searc Product enhanced to include images as well a text.	Implement electronic filing of Trademark documents.			Sep. 2001- TIS fully implemented.
Trademark Law Treaty (TLT)	October 1995- Treaty signed.					
Transition to Standard Processes, Data, and Tools	1Q96-Issue final, TSGs for testing and QA. Nov 95- LCM policy approved. Oct 95- Continue data modeling of developing systems and business areas. Nov 95- Issue final Data Management/ Element Standardization Technical Standards and Guidelines. Jan 96- Evaluate test tools. Jan 96- Evaluate initial information repository capabilities. Feb 96- Complete comprehensive PTO-wide records inventory.	Complete TSGs. Second release of key TSGs. Adopt standard test tools and data repository. Integrate logical data models. Continue data modeling of developing systems and business areas. Initiate data quality improvement program. Issue Vital Records Directive. Schedule Vital Records. Prepare disaster recovery plan for records.	Implement long-term capabilities of information repository. Continue data modeling of developing systems and business areas. Review and schedule new PTO records. Initiate disaster recovery contractor support. Increase peer reviews during design for SDM contractor projects. Implement PTO standard CM process for A16 systems. Begin model-based maintenance using data repository and model encyclopedia.	Manage information repository. Continue data modeling of developing systems and business areas. Review and schedule new PTO records. Increase code walkthroughs for SDM contractor projects. Automate interfaces between CM, RM, QA, data, and testing tools.	Manage information repository. Continue data modeling of developing systems and business areas. Review and schedule new PTO records. Assess operating experience with toolset (testing, CM, RM, QA, and data). Augment and refine standard data elements.	Continue to refine processes and tools. Manage information repository. Continue data modeling of developing systems and business areas. Review and schedule new PTO records. Augment and refine standard data elements.

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MASTER IMPLEMENTATION SCHEDULE FOR KEY INITIATIVES

INITIATIVES	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01
Transition to Standard Processes, Data, and Tools (Cont.")	3Q96- Issue final TSG for operations. June 96- Approve first set of standard data elements. Sep. 96- Issue updated PTO Records Schedule. Sep. 96--Complete enterprise model. Begin implementation of standard CM tool. Start code inspections.	Review and schedule new PTO records. Establish PTO standard requirements database. Implement PTO standard CM process for APS. Begin required use of information repository. Review and schedule new PTO records.				
Data Management System (DMS) Conceptual Design	Establish DMS Testbed. Begin DMS Concept Analysis Phase.	Replace CAS Foundation Code with Commercial DMS.	Integrate Standard DMS into PTCS.	Integrate Standard DMS into PTAS Integrate Standard DMS into RAM Integrate Standard DMS into Procurement Desktop		Integrate Standard DMS into PAM
POSIX Storage and DMS Procurement	DMS/Storage Bundle/ Unbundle Decision	DMS Awarded Storage Subsystem Awarded				
System Architecture	Publish Technical Reference Model Version 1.0 Develop PTO-wide Target Architecture (incl SGML, Electronic filing) Develop PTO-wide System Backup Architecture	Publish Technical Reference Model Version 1.1	Publish Technical Reference Model Version 1.2	Publish Technical Reference Model Version 1.3 Develop New-PAM/PALM Architecture	Publish Technical Reference Model Version 1.4	Publish Technical Reference Model Version 2.0
Transition to an Open System Environment	Develop Transition Plan to Achieve An Open System Environment		Implement Phase I of the Open System Transition Plan		Implement Phase II of the Open System Transition Plan	Implement Final Phase of the Open System Transition Plan

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MASTER IMPLEMENTATION SCHEDULE FOR KEY INITIATIVES

INITIATIVES	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01
Expand Availability of Business Applications Accessible from Desktop Workstations	Begin deployment of Executive Information System (EIS) capability. Begin deployment of Executive Document Management System (EXDOCS).	Begin expanded deployment of EIS capability. Begin expanded deployment of EXDOCS.	Continue expanded deployment of EIS capability. Continue expanded deployment of EXDOCS.	Continue expanded deployment of EIS capability. Continue expanded deployment of EXDOCS.	Continue expanded deployment of EIS capability. Continue expanded deployment of EXDOCS.	Continue expanded deployment of EIS capability. Continue expanded deployment of EXDOCS.
Improve Electronic Information Dissemination to External Customers	Begin expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Electronic Information Center available to the public. Begin expansion of magnetic tape, CD-ROM, and other commercial products and services,	Continued expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Continued expansion of magnetic tape, CD-ROM, and other commercial products and services,	Continued expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Continued expansion of magnetic tape, CD-ROM, and other commercial products and services,	Continued expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Continued expansion of magnetic tape, CD-ROM, and other commercial products and services,	Continued expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Continued expansion of magnetic tape, CD-ROM, and other commercial products and services,	Continued expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Continued expansion of magnetic tape, CD-ROM, and other commercial products and services,